BULL. BOT. SURV. INDIA
Vol. 6, Nos. 2-4 : pp. 219-235, 1964

ON A BOTANICAL TOUR TO LAHUL AND SPITI (PUNJAB HIMALAYAS)

N. C. NAIR

Botanical Survey of India, Northern Circle, Dehra Dun

ABSTRACT

This paper gives an account of the vegetation covering the area from Rohtang Pass to Shitikar ; of the Lahul and Spiti valley which the author visited in 1961. Collections made from Manali and Koti are also included in list of enumeration of plants.

During August-September 1961 the author undertook a tour to some parts of the picturesque valleys of Lahul and Spiti for the collection of plants for the Botanical Survey of India. The Lahul valley is reached by crossing the Rohtang Pass (4000 m). No place in this valley which is encircled by a number of glaciers and very high mountains is situated less than an altitude of 3000 m. In Koksar (3200 m), the first village after crossing the Rohtang Pass, were observed plots of terrace cultivation. *Fagopyrum tataricum* and *Saussurea lappa* were found to be cultivated. The area between Koksar and Chhatru (3300 m) is undulating and irregular. There are a few magnificent waterfalls near Chhatru which add to the charm of the valley. On either side of the way between Chhatru and Chotadara (3100 m) could be seen out crops of rounded boulders and slabs with sheltered niches. The area between Chotadara and Batal (3800 m) is uneven with several ups and downs, barren, desolate, and rocky with eroded slopes which rise up to jagged peaks between 5000-5500 m high. To these steep faces of the mountain, traces of previous winter still clung in a few dusty patches of hardened snow. Near Batal on the left bank of the turbulent river Chandra, is the famous Shiilgri glacier which runs over a length of 3 km and shot with "streaks of turquoise green and lapis-lazuli" hung over a steep declivity. Leaving Batal the path winds up towards the difficult Kunzum Pass (4415 m), which is surrounded and towered by a succession of gigantic nuggets of solid silvery snow.

The Spiti valley, known as the classic ground of Indian geology, is situated beyond the Kunzum Pass and lies amid the north-eastern ranges of the Kangra district and in some adjoining parts of the Central Himalayas. The area is accredited with the possession of representatives from all geological systems between Cambrian and Eocene. This stratigraphic succession of the basin is not only complete but also best known for its variety of fossil wealth (Wadia, 1957). Surrounding Shitikar, the first camping place in the valley, stand lofty mountains with an amazing overhang of permanent snow. Beyond Maran Pass (4600 m), is a magnificent blue lak picturesquely situated on the left bank of Chandra river and surrounded by mountains clad in a thick blanket of snow.

BOTANICAL HISTORY

The history of botanical exploration in the valley of Lahul dates back to 1868 when Aitchison gave a brief description of the vegetation and a list of plants collected by him. Subsequently Watt (1881) published a short account of Lahul plants. Joshi (1952) described the aquatic flora of Lahul. Recently Rau (1960) described the vegetation of the area from Koksar to Keylong and gave a list of 230 taxa. All the above accounts deal with the western part of Lahul and there is no information about the vegetation of the eastern part of Lahul as well as of Spiti. The present report covers the area from Rohtang Pass to Shitikar. Collections made from Manali and Koti are also included.

VEGETATION

The vegetation of the entire area is very sparse. This is chiefly due to the dryness, very low rainfall, the low capacity of the substratum to retain moisture, and excessive grazing by sheep. The area is covered by snow for more than six months in the year and consequently only those plants which possess adaptations to withstand all the abovementioned adverse conditions can grow. These adaptations include succulency (e.g., *Sedum* spp.), perennation by underground organs (e.g., *Lactuca macrorhiza*), propagation by suckers (e.g., *Saxifraga flagellaris*), cushiony and matted habit (=e.g., *Arabis pterosperma* and *Polygonum affine*), etc. Plants growing near permanent snow line often have persistent leaf bases which afford protection for the stem e.g., *Bergenia stracheyi* or matted fibres as in species of *Sedum*. The herbaceous elements shed their seeds by the first fall in late September or early October.

The eastern part of Lahul valley is characterised by screes, boulders and huge rocks on which are generally found a heavy growth of lichens. In the crevices are found, commonly, tufted plants of *Sedum ewersii, S. acuminatum, Cerastium cerastioides, Arenaria festucoides, A. kashmirica, Dianthus angulatus, Bupleurum garcillinum, Crepis flexuosus, Senecio pedunculatus,* etc. *Podophyllum emodi* and *Meconopsis aculeata* are also sometimes found in these rocky places. *Polygonum affine* forms thick mats over rocks. *Draba oreades, D. radicans, D. setosa* and *D. stenocarpa* are the other chief plants of the rocky substratum. These taxa exhibit an interesting cushiony growth habit and possess strong root system knit into the deeper layers of the rock. In sheltered niches where there is some soil and where the moisture is augmented by run off from the rock faces are present a good number of herbaceous species such as *Achillea millefolium, Anaphalis busua, Trigonella emodi, Taraxacum officinale, Polygonum aviculare, Lactuca macrorhiza, Agropyron canaliculatum, Agrostis canina, Calamagrostis pseudophragmites, Phleum alpinum,* etc. Streams, which are purely fed by melting snow, have on the banks a rich growth of herbaceous elements such as *Impatiens thomsonii, Ranunculus muricatus, Aconitum violaceum, Caltha palustris, Astragalus melanostachys, Rorippa indica, Sagina saginoides, Phleum alpinum* and species of *Epilobium, Galium, Polygonum, Juncus,* etc. On the sandy banks of Chandra are found *Bromus japonicus, Pennisetum lanatum, Gnaphalium thomsonii, Deyeuxia pulchella, Agrostis canina, Calamogrostis pseudophragmites, Juncus bufonius,* etc. In marshy places on the banks of rivers and streams could be seen luxuriant growth of *Veronica biloba, V. beccabunga, Rorippa indica, Scirpus setaceus, Juncus membranaceus, Kobresia scheonoides,* etc. From the puddles and streams in Shitikar were collected species of *Callitriche.* The vegetation around Chandratal lake is very impressive in that the water margin has luxuriant growth of several herbaceous species such as *Aconitum violaceum,* species of *Gentiana, Potentilla,* etc. The flowers of these add to the charm and beauty of the blue lake. The lake has no aquatic plants. From a narrow stream running from the lake to Chandra river was collected one of the high altitude mosses, *Leptodictyum riparium* (Hedw.) Warst. of Amblystegiaceae.

A remarkable feature of the vegetation of the Lahul and Spiti valley is that those hill slopes facing south and east are practically devoid of any vegetation. On the other hand north and west facing slopes support some plants. In sheltered gullies and hollows between Koksar and Chhatru vegetation dominated by trees are present. Often the vegetation is a pure community of *Betula utilis.* The trees do not attain a height of more than 6-8 m The common associates with *Betula* are *Rhododendron campanulatum, Sorbus aucuparis,* etc. There is acute shortage of firewood in the area. The traders going to the higher regions of Spiti cut the shrubs and trees ruthlessly. This can have a direct influence on the vegetation. As in other parts of N. W. Himalayas trees grow only up to 3750 m. Above this level trees are replaced by small shrubs, such as *Rhododendron anthopogon, Juniperus wallichiana, Cassiope fastigiata, Gaultheria trichophylla,* etc., which manage to survive in spite of the strong winds. These shrubs go up to a height of 4200 m. Between this height and the region of permanent snow only stray herbaceous elements could be seen. These include *Geranium tauricum, Sedum acuminatum, S. heterodontum, Leontopodium alpinum, Taraxacum officinale, Primula* sp., etc. The bare slopes often show clumps of *Ephedra gerardiana.* Chhatru is the last point where one could see some trees and shrubs dotting the mountain slopes. Beyond Chhatru the hill slopes are completely barren except for some stray herbaceous plants.

ENUMERATION

RANUNCULACEAE

Aconitum heterophyllum Wall. ex Royle, Ill. 56, t. 13, 1834; Hook. f. et Thoms. in Hook. f. Fl. Brit. Ind. 1: 29, 1872; Mukerjee in Bull. Bot. Surv. India 3: 100, 1961. *A. cordatum* Royle, Ill. 56, 1834. *A. ovatum* Lindl. in Bot. Reg. 26: 53, 1840.

Koksar 3425 m, *N. C. Nair* 17038; Chandratal 4169 m, *N. C. Nair* 16770.

A. violaceum Jacq. ex Stapf in Ann. R. Bot. Gard. Cal. 10: 144, 1905; Mukerjee 101. *A. napellus* var. *multifidum* et var. *rigidum* (p.p.) Hook. f. et Thoms. 29. *A. napellus* var. *tauricum* Duthie in Rec. Bot. Surv. India 1(3): 37, 1894 p.p.

Frequent in moist places and water margins. Chhatru 3450 m, *N. C. Nair* 16955; Chandratal 4169 m, *N. C. Nair* 16764.

According to Mukerjee loc. cit., this species is confined to N. E. Himalays. But in Lahul and Spiti it appears to be frequent.

Aquilegia fragrans Benth. Maund Botanist. 4: t. 181, 1840; Munz. Gentes Herb. 7: 87, 1946; Mukerjee 101. *A. vulgaris* subsp. *moorcroftiana* var. *fragrans* Brühl in J. Asiat. Soc. Beng. 61: 305, 1893. *A. vulgaris* subsp. *alpina* Hook. f. et Thoms. 24. *A. vulgaris* var. *pyrenaica* Hook. f. et Thoms. 24.

Pubescent herbs in moist places. Koksar 3425 m, *N. C. Nair* 17039.

Anemone obtusiloba D. Don, Prodr. 194, 1825; Hook. f. et Thoms. Fl. Ind. 22, 1855; Hook. f.

et Thoms. in Fl. Brit. Ind. 1: 8, 1872; Mukerjee, 140.
Rohtang Pass 4000 m, *N. C. Nair* 17073.

Caltha palustris Linn. Sp. Pl. 558, 1753; Hook. f. et Thoms. in Hook. f. Fl. Brit. Ind. 1: 21, 1872; Mukerjee in Bull. Bot. Surv. India 2: 105, 1960. *C. govaniana* Wall. ex Royle, Ill. 54, 1839.
Dorni 3700 m, *N. C. Nair* 16991.

Halerpestes sarmentosa (Adams) Kamarov in Kom. et Klob.-Alis, Key Pl. far East U.S.S.R. 1: 550, 1931; Chatterjee in J. Bombay nat. Hist. Soc. 56: 670, 1960; Mukerjee 99. *Ranunculus sarmentosus* Adams in Mem. Soc. Nat. Mosc. 9: 244, 1834. *R. cymbalariae* Hook. f. et Thoms. in Fl. Brit. Ind. 1: 17, 1872 p.p. non Pursh. 1814. *R. subsimilis* Printz in Contr. Fl. As. Int. 3: 239, 1921.

A very small moisture loving acaulescent glabrous herb with long rooting runners. Shitikar 4169 m, *N. C. Nair* 17199, 17200.

Ranunculus hirtellus Royle, Ill. 53, 1839; Hook. f. et Thoms. Fl. Ind. 34, 1855 et Fl. Brit. Ind. 1: 18, 1872; Mukerjee 103.
Common in moist places. Koti 2600 m, *N. C. Nair* 17123; Chhatru 3350 m, *N. C. Nair* 16666, 16976; Dadarphoo 3375 m, *N. C. Nair* 16639; Kunzum Pass 4535 m, *N. C. Nair* 16791.

R. hyperboreus Rottb. var. **natans** Regel ex Hook. f. et Thoms. Fl. Brit. Ind. 1: 18, 1872; Mukerjee, 103. *R. hyperboreus* Rottb. var. *multifidus* Hook. f. et Thoms. 18, (non *R. multifidus* Pursh.) *R. hyperboreus* Rottb. var. *radicans* Hook. f. et Thoms. 18.
Creeping herb in moist soil. Chhatru 3325 m, *N. C. Nair* 16974.

R. laetus Wall. ex Royle 53, 1839; Hook. f. et Thoms. Fl. Ind. 36, 1855 et Fl. Brit. Ind. 1: 19, 1872. Mukerjee 103. *R. distans* Royle Ill. 1: 19, 53: 1839.
Erect robust herbs near streams. Koti *N. C. Nair* 17123b.

R. muricatus Linn. Sp. Pl. 780, 1753; DC. Prodr. 1: 42, 1824; Hook. f. et Thoms. Fl. Ind. 39, 1855, et in Fl. Brit. Ind. 1: 20, 1872; Mukerjee 104.
A small herb in swampy localities. Chhatru 3425 m, *N. C. Nair* 16978.

Thalictrum foliolosum DC. Syst. 1: 175, 1818; Royle, Ill. 51, 1839; Hook. f. et Thoms. In Fl. Brit. Ind. 1: 14, 1872; Lecoy. Monogr. Thalic. 115, 1855; Mukerjee 99. *T. falconeri* Lecoy. Bull. Bot. Soc. Beng. 24: 192, 1885; Monogr. Thalic. 117, 1885.
Manali 2200 m, *N. C. Nair* 17135.

BERBERIDACEAE

Podophyllum emodi Wall. ex Royle, Ill. 64, 379 in nota 1839; Hook. f. et Thoms. 112.
In crevices of rocks, frequent. Rhizome and fruit medicinal. Koksar 3425 m, *N. C. Nair* 17054; Chotadara 3850 m, *N. C. Nair* 16857.

PAPAVERACEAE

Meconopsis aculeata Royle, Ill. 67, t. 15, 1834; Hook. f. et Thoms. 118.
Chhatru 3350 m, *N. C. Nair* 16973.

FUMARIACEAE

Corydalis cornuta Royle, Ill. 69, 1834; Hook. f. et Thoms. 126. *C. debilis* Edgew. in Trans. Linn. Soc. 20: 30, 1846.
Koti 2700 m, *N. C. Nair* 16435, 17132; Rahla 2850 m, *N. C. Nair* 16523.

CRUCIFERAE

Arabidopsis himalaica (Edgew.) Schulz in Pflanzenr. 86: 283, 1924. *Arabis himalaica* Edgew. in Trans. Linn. Soc. 20: 31, 1846. *Sisymbrium himalaicum* Hook. f. et Thoms. in Proc. Linn. Soc. Bot. 5: 160, 1861; Hook. f. et Anders. in Fl. Brit. Ind. 1: 147, 1872.
Koksar 3400 m, *N. C. Nair* 16483.

A. mollissima (C. A. Mey.) Schulz, 281. *Sisymbrium mollissima* C. A. Mey. in Ledeb. Fl. Alt. 3: 140, 1831; Hook. f. et Anders. 147.
Chhatru 3325 m, *N. C. Nair* 16575.

A. thaliana (Linn.) Heynhold in Holl et Heynh. Fl. Sachs. 1: 538, 1842; Schulz, 270. *Arabis thaliana* Linn. Sp. Pl. 665, 1753. *Sisymbrium thalianum* (Linn.) J. Gay et Monnard in Ann. Sc. Nat. Bot. 1: Ser. 7: 399, 1826 in adnot.; Hook. f. et Anders. 148.
Common on hill slopes. Chotadara 3630-3850 m, *N. C. Nair* 16675, 16880; between Dorni and Chhatru 3325 m, *N. C. Nair* 16982.

Arabis amplexicaulis Edgew. in Trans. Linn. Soc. 20: 31, 1846; Hook. f. et Anders. 136.
Dadarphoo 3375 m, *N. C. Nair* 16608.

A. auriculata Lamk. Dict. 1: 219, 1783; Hook. f. et Anders. 135.
Small herb in moist places. Between Kunzum Pass and Shitikar 3950 m, *N. C. Nair* 16699.

A. pterosperma Edgew. in Trans. Linn. Soc. 20: 33, 1846; *A. alpina* Hook. f. et Anders. 135 (non Linn. pro parte).
Badadara 3975 m, *N. C. Nair* 16856; Kunzum hills 3535 m, *N. C. Nair* 16801.

A. taraxacifolia Anders. ex Hook. f. et Anders. loc. cit. 136.
Maran Pass 4600 m, *N. C. Nair* 16746; way to Kunzum Pass 3975 m, *N. C. Nair* 16699a.

A. tibetia Hook. f. et Thoms. in J. Linn. Soc. 5: 143, 1861; Hook. f. et Anders. 136.
Between Kunzum Pass and Shitikar 4025 m, *N. C. Nair* 16689; Kunzum Pass 4535 m, *N. C. Nair* 16793.

Brassica nigra (Linn.) Koch in Rohling, Deutschl Fl. ed. 3, 4: 713, 1833 et Syn. ed. 1, 59, 1835; Hook. f. et Anders. 156; Schulz in Pflanzenr. 70: 75, 1919. *Sinapis nigra* Linn. Sp. Pl. 668, 1753.

Frequent on waysides. Chhatru 3325 m, *N. C. Nair* 16578; Dadarphoo 3500 m, *N. C. Nair* 16925.

Capsella bursa-pastoris (Linn.) Medic. Pflanzeng. 85, 1792. *Thlapsi, bursa-pastoris* Linn. Sp. Pl. 647, 1753. *Capsella bursa-pastoris* (Linn.) Moench ex Hook. f. et Anders. 159.

Common weed. Koksar 3400 m, *N. C. Nair* 16473, 16484, 16560; between Rohtang Pass and Koksar 4075 m, *N. C. Nair* 17063; between Chotadara and Chhatru 3530 m, *N. C. Nair* 16888.

Chorispora sabulosa Camb. in Jacq. Voy. Bot. 15, t. 15, 1844; Hook. f. et Thoms. in J. Proc. Linn. Soc. 5: 181, 1861; Hook. f. et Anders. loc. cit. 167.

Local name: *maslum*.

Used as vegetable by Tibetans. Chhatru 3350 m, *N. C. Nair* 16966; Chotadara 3850 m, *N. C. Nair* 16881.

Dontostemon glandulosum (Kar. et Kir.) Schulz in Notizbl. Bot. Gart. Berlin 10: 554, 1929. *Arabis glandulosa* Kar. et Kir. in Bull. Soc. Imp. Mosc. 15: 147, 1842; Hook. f. et Thoms. in J. Linn. Soc. 5: 143, 1861; Hook. et Anders. 136.

Maran Pass 4600 m, *N. C. Nair* 16750 a.

Draba oreades Shrenk. in Fisch. et Mey. Enum. Pl. Nov. 2: 56, 1842; Schulz in Pflanzenr. 89; 106, 1927. *D. alpina* Hook. f. et Thoms. in Proc. Linn. Soc. Bot. 5: 150, 1861 non Linn; Hook. f. et Anders. 142.

Kunzum hills 3950 m, *N. C. Nair* 16812.

D. setosa Royle, Ill. 1: 71, 1839; Schulz, 104. *D. glacialis* Hook. et Anders. 142 in parte (excl. syn. Boiss.) non Adams.

Maran Pass 4600 m, *N. C. Nair* 16750. Kunzum Pass 4535 m, *N. C. Nair* 16729. Between Kunzum Pass and Shitikar 3950 m, *N. C. Nair* 16716.

Draba sp.

Kunzum Pass 4535 m, *N. C. Nair* 16731.

D. stenocarpa Hook. f. et Thoms. in Proc. Linn. Soc. Bot. 5: 153, 1861; Schulz, 318. *D. linearis* Hook. f. et Anders. 144 (non Boiss.).

Approach to Kunzum Pass 3975 m, *N. C. Nair* 16698.

Microsisymbrium minutiflorum (Hook. f. et Thoms.) Schulz in Pflanzenr. 86: 160, 1924. *Sisymbrium minutiflorum* Hook. f. et Thoms. 168; Hook. f. et Anders. 149.

Chotadara 3975 m, *N. C. Nair* 16880a.

Rorippa indica (Linn.) Hochr. in Candollea 2: 370, 1925. *Nasturtium indicum* DC. Prodr. 1: 139, 1824; Hook. f. et Anders. 134.

In marshy places and moist situations. Koti 2700 m, *N. C. Nair* 16425, 17130.

CARYOPHYLLACEAE

Arenaria festucoides Benth. in Royle, Ill. 81, t. 21, 1834; Edgew. et Hook. f. in Fl. Brit. Ind. 1: 236, 1874.

On dry places and rocks. Chotadara 3850, *N. C. Nair* 16884.

A. neelgerrensis Wight et Arn. Prodr. 43, 1834; Edgew. et Hook. f. 239.

Chhatru 3325 m, *N. C. Nair* 16584; between Dorni and Chhatru 3325 m, *N. C. Nair* 16981.

A. serpyllifolia Linn. Sp. Pl. 423, 1753; Edgew. et Hook. f. 239.

Koksar 3400 m, *N. C. Nair* 16481.

Cerastium cerastioides (Linn.) Britton in Mem. Torrey Bot. Club. 5: 150, 1894. *Stellaria cerastioides* Linn. Sp. Pl. 604, 1753. *C. trigynum* Vill. Prosp. 48, 1779; Edgew. et Hook. f. 227.

Chhatru 3325 m, to 3450 m, *N. C. Nair* 16571, 16970; Kunzum Pass 4535 m, *N. C. Nair* 16735.

C. glomeratum Thill. Flor. Par. (ed. 2) 226, 1824; *C. vulgatum* Wight et Arn. Prodr. 43, 1834; Wight, Ic. t. 948, 1845; Edgew. et Hook. f. 228.

Koksar 3400 m, *N. C. Nair* 16493.

Dianthus angulatus Royle, Ill. 79, 1834; Edgew. et Hook. f. 215.

On dry hill slopes. Dadarphoo 3400 m, *N. C. Nair* 16638; Chhatru 3350 m, *N. C. Nair* 16951.

Gypsophila cerastioides D. Don Prodr. Fl. Nep. 213, 1825; Edgew. et Hook. f. 217. *Acosmia rupestris* Benth. ex Camb. in Jacq. Voy. Bot. 26, t. 28, 1844.

Koti 2700 m, *N. C. Nair* 16441; Rahla 2850 m, *N. C. Nair* 16517, 16524; Chhatru 3325 m, *N. C. Nair* 16597, 16972.

Lychnis brachypetala Schwaeg. ex Schrank in Denkschr. Bot. Ges. Regensb. 2: 47, 1822. *L. brachypetala* Edgew. et Hook. f. 223 non Hort. Berol.

Chhatru 3350 m, *N. C. Nair* 16952.

L. himalayensis (Rohrb.) Edgew. ex Edgew. et Hook. f. 223. *L. apetala* var. *himalayensis* Rohrb. in Linnaea 36: 220, 1870.

Dadarphoo 3400 m, *N. C. Nair* 16606.

L. indica Benth. in Royle, Ill. 81, 1834; Edgew. et Hook. f. 225.

Koti 2700 m, *N. C. Nair* 16409; Koksar 3425 m, *N. C. Nair* 17040; between Dorni and Chhatru 3325 m, *N. C. Nair* 16979.

Minuartia kashmirica (Edgew.) Mattf. in Fedde Repert. Sp. Nov. Beih. 15: 154, 1922. *Arenaria kashmirica* Edgew. in Edgew. et Hook. f. 236.

Badadara 3975 m, *N. C. Nair* 16854; Dadarphoo 3400 m, *N. C. Nair* 16630; Betal 4000 m, *N. C. Nair* 16867; between Kunzum Pass and Shitikar 3988 m, *N. C. Nair* 16814, 16975.

Sagina saginoides (Linn.) Karsten, Deutsche Fl. 539, initio 1882; *ibid* 2 Aufl. 2: 73, 1895; Mizushima

in Kihara Fauna and Fl. Nepal Himal. 124, 1955; Mizushima J. Jap. Bot. 35: 194, 1960. *Spergula saginoides* Linn. Sp. Pl. 1: 441, 1753. *Sagina procumbens* Linn. Edgew. et Hook. f. 243 cum var. *pentamera*.

Forms green carpets in moist places. Chhatru 3325 m, *N. C. Nair* 16576; Koksar 3400 m, *N. C. Nair* 16475; between Betal and Kunzum Pass 3635 m, *N. C. Nair* 16684; Shitikar 3950 m, *N. C. Nair* 16803.

Silene cucubalus Wibel in Rohrb. Monogr. Silene 84, 1868. *S. inflata* Smith Edgew. et Hook. f. 218.
Koti 2600 m, *N. C. Nair* 17119.

Stellaria crispata Wall. ex D. Don, Prodr. Fl. Nep. 215, 1825; Edgew. et Hook. f. 229.
Chhatru 3350 m, *N. C. Nair* 16653; Chotadara 3630-3850 m, *N. C. Nair* 16673, 16674, 16876.

S. decumbens Edgew. in Trans. Linn. Soc. 20: 35, 1846; Edgew. et Hook. f. 234.
Kunzum Pass 4535 m, *N. C. Nair* 16730.

HYPERICACEAE

Hypericum elodioides Choisy in DC. Prodr. 1: 552, 1824; Edgew. et Hook. f. in Fl. Brit. Ind. 1: 225, 1874. *H. nervosum* D. Don, Prodr. 219, 1825.
Koti 2700 m, *N. C. Nair* 16426.

MALVACEAE

Malva rotundifolia Linn. Sp. Pl. 688, 1753; DC. Prodr. 1: 433, 1824. Edgew. et Hook. f. 320.
Koksar 3400 m, *N. C. Nair* 16461; Chhatru 3375 m, *N. C. Nair* 16668, 16950.

GERANIACEAE

Geranium aconitifolium L'Herit. Geran. t. 40, 1787; DC. Prodr. 1: 642, 1824. Edgew. et Hook. f. 429.
Koksar 3400 m, *N. C. Nair* 16479.

G. nepalense Sweet, Geraniac. 1, sub t. 12, 1820; D. Don Prodr. 208, 1825; Edgew. et Hook. f. 430. *G. radicans* DC. Prodr. 1: 639, 1824.
Koti 2600 m, *N. C. Nair* 17126.

G. tauricum Rupr. in Mem. Ac. Imp. Sc. Petersb. Ser. 7, t. 15, 2: 268, 1869. *G. collinum* M. Bieb. Fl. Taur-Cauc. 3: 455, 1818 non Steph.; DC. loc. cit. 642; Edgew. et Hook. 429. *G. multifidum* D. Don Prodr. 207, 1825.

Chhatru 3375 m, *N. C. Nair* 16667, 16968; Maran Pass 4500 m, *N. C. Nair* 16780; Kunzum Pass 4535 m, *N. C. Nair* 16799.

G. wallichianum D. Don ex Sweet, Geraniac. 1, t. 90, 1820; DC. 641; D. Don 208, 1825; Edgew. et Hook. f. 430.
Koti 2600 m, *N. C. Nair* 16422, 17124; Rahla 2800 m, *N. C. Nair* 16527.

BALSAMINACEAE

Impatiens amphorata Edgew. in Trans. Linn. Soc. 20: 39, 1846; Hook. f. in Fl. Brit. Ind. 1: 475, 1874.
Koti 2700 m, *N. C. Nair* 16418.

I. glandulifera Royle, Ill. 151, t. 28, f. 2, 1834. *I. roylei* Walp. Rep. Bot. Syst. 1: 475, 1842. Hook. f. et Thoms. in J. Linn. Soc. 4: 127, 1859. Hook. f. 468.
Koksar 3400 m, *N. C. Nair* 16472.

I. scabrida DC. Prodr. 1: 687, 1824; Wight, Icon. t. 323, 1840; Hook. f. et Thoms. 136; Hook. f. 472. *I. cristata* Wall. in Roxb. Fl. Ind. 2: 456. 1832. *I. calycina* Wall. in Roxb. 463. *I. hamiltoniana* D. Don, Prodr. 204, 1825.
Near Rahla 3900 m, *N. C. Nair* 17082.

I. thomsonii Hook. f. in J. Linn. Soc. 4: 128, 1859; Hook. f. 469.

Common on hill slopes. Rahla 2850 m, *N. C. Nair* 16518; Koksar 3400 m, *N. C. Nair* 16469, 16472; Chhatru 3350 m, *N. C. Nair* 16652; Dadarphoo 3580 m, *N. C. Nair* 16899; Chotadara 3850 m, *N. C. Nair* 16885.

LEGUMINOSAE

Aeschynomene indica Linn. Sp. Pl. 713, 1753; DC. Prodr. 2: 320, 1825; Wight et Arn., Prodr. 219, 1834; Baker in Fl. Brit. Ind. 2: 151, 1876. *A. kashmiriana* Camb. in Jacq. Voy. Bot. 40, t. 48, 1844.
In moist places. Manali 2200 m, *N. C. Nair* 17147.

Astragalus himalayanus Klotz. Reize. Pr. Wald. Bot. 160, t. 4, 1862; Baker 126.
Koksar 3400 m, *N. C. Nair* 16476b, 16498b, 17007; between Rohtang Pass and Koksar 4075 m, *N. C. Nair* 17064; Kunzum Pass 4600 m, *N. C. Nair* 16691.

A. melanostachys Benth. ex Bunge Astragal. 1: 21, 1868; 2: 22, 1869; Baker 125. *A. bracteosus* Klotz. loc. cit. 160, t. 5, non Boiss.

There are two forms of this taxon. One is a low herb with erect or prostrate branches up to 25 cm long the other with spreading reddish branches up to 2 m long. Chhatru 3325-3400 m, *N. C. Nair* 16926, 16937, 16943; Chotadara 3850 m, *N. C. Nair* 16878; Shitikar 3950 m, *N. C. Nair* 16833.

A. strictus Grah. ex Benth. in Royle, Ill. 198, 1835; Bunge Astragal. 1: 23, 1868; 2: 27, 1869; Baker 124.

Koksar 3400 m, *N. C. Nair* 16476, 16498; Dadarphoo 3400 m, *N. C. Nair* 16604; Chandratal 4169 m, *N. C. Nair* 16762.

A. tibetanus Benth. ex Bunge, Astragal. 1: 52; 2: 85; Baker, 124.
Chhatru 3325 m, *N. C. Nair* 16573.

Cicer arietinum Linn. Sp. Pl. 738, 1753; Baker, 176.
Stray plants. Koksar 3400 m, *N. C. Nair* 16497.

Hedysarum microcalyx Baker, 147.
Koksar 3425 m, *N. C. Nair* 17030.

Lespedeza sericea Benth. in Miq. Pl. Jungh. 227, 1852; Baker, 142.
Manali 2200 m, *N. C. Nair* 17152.

Lotus corniculatus Linn. Sp. Pl. 775, 1753; Baker, 91.
Common on hill slopes. Koksar 3400 m, *N. C. Nair* 16485, 16565; Chhatru 3375 m, *N. C. Nair* 16665; Dadarphoo 3400-3530 m, *N. C. Nair* 16637, 16916.

Parochetus communis Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 240, 1825; DC. Prodr. 2: 403, 1825; Royle, Ill. t. 35, 1834; Baker, 86. *P. major* Don, 241. *P. oxalidifolia* Royle, Ill. 201, 1835.
Koti 2700 m, *N. C. Nair* 16453. Between Rahla and Madi 3900 m, *N. C. Nair* 17087; Rahla 2800 m, *N. C. Nair* 16504.

Trifolium repens Linn. Sp. Pl. 767, 1753; DC. 198; Baker, 86.
Common in exposed situations. Koti 2700 m, *N. C. Nair* 16427; Chhatru 3400 m, *N. C. Nair* 16656.

Trigonella emodi Benth. in Royle, Ill. 197, 1835; Baker, 88. *T. cachemeriana* Camb. in Jacq. Voy. Bot. 36, t. 41, 1844.
Koksar 3400 m, *N. C. Nair* 16554, 17102; Batal 3900 m, *N. C. Nair* 16835.

ROSACEAE

Cotoneaster integerrima Medic. Gesch. d. Bot. 85, 1793; Park. For. Fl. Punj. 228, 1956. *C. vulgaris* Lindl. in Trans. Linn. Soc. 13: 101, 1822; Hook. f. Fl. Brit. Ind. 2: 385, 1878.
Koksar 3425 m, *N. C. Nair* 17050.

C. microphylla Wall. ex Lindl. Bot. Reg. 13, t. 1114, 1827; Brandis, For. Fl. 209, 1874; Hook. f. 387.
Koti 2700 m, *N. C. Nair* 16440. Rahla 2900 m, *N. C. Nair* 16529.

Fragaria vesca Linn. Sp. Pl. 494, 1753; Hook. f. 344.
Chhatru 3325-3400 m, *N. C. Nair* 16587, 16662.

Potentilla ambigua Camb. in Jacquem. Voy. Dans l'Inde 4: 51, tab 62, 1844; Hook. f. 348.
Kunzum Pass 4400 m, *N. C. Nair* 16720.

P. argyrophylla Wall. in Lehm. Rev. Potentil. 151, 1854; Hook. f. 357. *P. jacquemontiana* Camb. in Jacq. Voy. Bot. 51, t. 63, 1844. *P. insignis* Royle ex Lindl. in Bot. Reg. t. 37, 1841.
Common. Koti 2700 m, *N. C. Nair* 16411; Rahla 2900 m, *N. C. Nair* 16438; Chhatru 3425 m, *N. C. Nair* 16948; Maran Pass 4500 m, *N. C. Nair* 16779; Kunzum Pass 4535 m, *N. C. Nair* 16724, 16744.

P. atrosanguinea Lodd. var. **cataclines** Th. Wolf in Bot. Central. Bl. 16: heft 71: 230, 1908. *P. argyrophylla* var. *leucochroa* Hook. f. 357, in part.
Common on slopes of hills. Kunzum Pass 4535 m, *N. C. Nair* 16789.

P. leschnaultiana Ser. in DC. Prodr. 2: 584, 1825; Wight, Ic. t. 990, 1845; Hook. f. 350.
Chotadara 3850 m, *N. C. Nair* 16845.

P. multifida Linn. Sp. Pl. 496, 1753; Hook. f. 353.
Shitikar 3950 m, *N. C. Nair* 16822.

P. supina Linn. Sp. Pl. 497, 1753; Hook. f. 359.
Chotadara 3850 m, *N. C. Nair* 16882.

Rosa macrophylla Lindl. Monogr. Ros. 35, t. 6, 1820; Hook. f. 366.
Koksar 3375 m, *N. C. Nair* 17027.

Rubus saxatilis Linn. Sp. Pl. 494, 1753; Hook. f. 333.
Dorni 3400 m, *N. C. Nair* 16999.

Sibbaldia parviflora Willd. in Ges. Naturf. Fr. Newschr. 2: 125, t. 5, f. 2, 1799. *P. sibbaldi* sensu Hook. f. 345. non Haller f.
Koksar 3400 m, *N. C. Nair* 16495; Chhatru 3325-3350 m, *N. C. Nair* 16577, 16646, 16975.

Sorbaria tomentosa (Lindl.) Rehder in J. Arnold Arb. 19: 74, 1938; Kitamura in Kihara, Fauna and Fl. Nep. Him. 160, 1955. *Schizonotus tomentosus* Lindl. Bot. Reg. Misc. 71, 1840. *Spiraea sorbifolia* sensu Hook. f. 324, non Linn.
On banks of Beas. Manali 2100 m, *N. C. Nair* 17140.

Sorbus aucuparia Linn. Sp. Pl. 477, 1753. *Pyrus aucuparia* (Linn.) Gaertn. De Fruct. 2: 45, 1791; Hook. f. loc. cit. 375.
In crevices of rocks; rare. Between Dorni and Chhatru 3325 m, *N. C. Nair* 16984.

Spiraea canescens D. Don, Prodr. Fl. Nepal. 227, 1825; Hook. f. 325.
Manali 2100 m, *N. C. Nair* 17142.

S. vestita Wall. ex G. Don, Gen. Syst. 2: 521, 1837; Hook. f. 323.
Chhatru 3450 m, *N. C. Nair* 16961.

SAXIFRAGACEAE

Bergenia stracheyi (Hook. f. et Thoms.) Engl. in Pflanzenf. 3 (2a): 50, 1890; *Saxifraga stracheyi* Hook. f. et Thoms. in J. Linn. Soc. 2: 61, 1857; Clarke in Hook. f. Fl. Brit. Ind. 2: 398, 1878.
Kunzum Pass, *N. C. Nair* 16725.

Parnassia nubicola Wall. ex Royle, Ill. 227, t. 50, 1835; Wight, Ill. t. 21, 1840; Clarke, 402.
Rahla 2875 m, *N. C. Nair* 16540.

Ribes alpestre Wall. ex Decne. in Jacq. Voy. Bot. t. 75, 1844. *R. glossularia* sensu Clarke, 410 non Linn.
Dadarphoo 3400 m, *N. C. Nair* 16641.

Saxifraga brachypoda D. Don var. **fimbriata** (Wall.) Engl. et Irmsch. in Engl. Bot. Jahrb. 591, 1912 & in Pflanzenr. 67: 137, 1916. *S. fimbriata* Wall.

ex Ser. in DC. Prodr. 4: 45, 1830; Clarke, 396. Rohtang Pass 4000 m, *N. C. Nair* 17079.

Saxifraga diversifolia Wall. var. **parnassifolia** (D. Don) Engl. Monogr. Gatt. Sax. 125, 1872; Clarke, 393; Engl. et Irmsch. Pflanzenr. 67: 129, 1916. *S. parnassifolia* D. Don in Trans. Linn. Soc. 13: 405, 1821.
Koti 2800 m, *N. C. Nair* 16501.

S. flagellaris Willd. subsp. **stenophylla** (Royle) Hulten in Svensk Bot. Tidskr. 58: 94, 1964. *S. stenophylla* Royle, Ill. 227, t. 50, f. 1, 1839. *S. flagellaris* Willd. subsp. *euflagellaris* Engl. et Irmsch. var. *stenosepala* Trantiv. forma *humilis* Engl. et Irmsch. in Pflanzenr. 67: 160, 1916.
Maran Pass 4550 m, *N. C. Nair* 16751; Kunzum Pass 4535 m, *N. C. Nair* 16736.

CRASSULACEAE

Cotyledon oreades (Decne.) Clarke in Hook. f. Fl. Brit. Ind. 2: 416, 1878. *Umbilicus oreades* Decne. in Jacq. Voy. Bot. 62, 1844.
Rare. Rohtang Pass 4000 m, *N. C. Nair* 17080.

Sedum acuminatum R. Hamet. in Candollea 4: 21, 1929.

Koksar 3400 m, *N. C. Nair* 16487; Dadarphoo 3400 m, *N. C. Nair* 16613; Chhatru 3325 m, *N. C. Nair* 16792.

S. ewersii Ledeb. Fl. Alt. 2: 191, 1830; Hook. f. et Thoms. in J. Linn. Soc. 2: 102, 1856; Clarke in Fl. Brit. Ind. 2: 421, 1878. *S. azureum* Royle, loc. cit. 222, 1835; Edgew. in Trans. Linn. Soc. 20: 47, 1846.

In crevices of rocks; common on hill slopes. Koksar 3400 m, *N. C. Nair* 16455; Chhatru 3325 m, *N. C. Nair* 16581; between Chhatru and Chotadara 3530 m, *N. C. Nair* 16893; Chotadara 3850 m, *N. C. Nair* 16860; Kunzum Pass 4225-4535 m, *N. C. Nair* 16695, 16790; Maran Pass 4550 m, *N. C. Nair* 16776.

S. heterodontum Hook. f. et Thoms. in J. Linn. Soc. 2: 95, 1858; Clarke 417.
Rare, in crevices of rocks. Batal 4000 m, *N. C. Nair* 16862; Shitikar 4000 m, *N. C. Nair* 16834.

S. linearifolium Royle, Ill. 222, t. 48. 1835; Clarke 420. *S. pauciflorum* Edgew. in Trans. Linn. Soc. 20: 49, 1846. *S. mucronatum* Edgew. loc. cit. 48.
Rahla 2900 m, *N. C. Nair* 16536, 171086; Koti 2675 m, *N. C. Nair* 17112.

S. multicaule Wall. ex Lindl. Bot. Reg. 58, 1840; Clarke 422.

Rahla 2850 m, *N. C. Nair* 16510; Koti 2600 m, *N. C. Nair* 16406, 17113; Rohtang Pass 4000 m, *N. C. Nair* 17028.

S. quadrifidum Pall. Reise 3: 730, 1776; Clarke 418. *S. coccineum* Royle, Ill. t. 48, 1835.
Rohtang Pass 4000 m, *N. C. Nair* 17076; Kunzum Pass 4535 m, *N. C. Nair* 16726.

S. tibeticum Hook. f. et Thoms. in J. Linn. Soc. 2: 96, 1858; Clarke, 418.
Shitikar 4000 m, *N. C. Nair* 16824.

Tillaea pentandra Royle, Ill. 222, 1835 (nomen) ex Edgew. Trans. Linn. Soc. 20: 50, 1846; Clarke 412.
Koti 2700 m, *N. C. Nair* 17095.

HALORAGACEAE

Callitriche hamulata Ldb. Fl. Ross. 2: 121, 1844.
Shitikar 4000 m, *N. C. Nair* 17161.

C. stagnalis Scop. Fl. Carn. 2: 251, 1772; Clarke in Hook. f. Fl. Brit. Ind. 2: 434, 1878. *C. wightiana* Wall. ex Wight et Arn. Prodr. 339, 1834; Wight, Ic. 1947, 1853.
Shitikar 4000 m, *N. C. Nair* 17160.

ONAGRACEAE

Epilobium angustifolium Linn. Sp. Pl. 347, 1753; Clarke in Hook. f. Fl. Brit. Ind. 2: 582, 1879. Raven in Notes Roy. Bot. Gard. Edinb. 24: 186, 1962. *Chamaenerion angustifolium* (Linn.) Scop. Fl. Carn. ed. 2, 271, 1772.

Dadarphoo 3400 m, *N. C. Nair* 16634; Shitikar 4000 m, *N. C. Nair* 16825.

E. latifolium Linn. Sp. Pl. 347, 1753; Clarke, 583. *Chamaenerion latifolium* (Linn.) Th. Fr. et Lange in Fl. Dan. fasc. 49: 290, 1877.

On banks of streams. Chhatru 3325 m, *N. C. Nair* 16932.

E. alpinum Linn. Sp. Pl. 348, 1753; Clarke, 586.
Kunzum area 3975 m, *N. C. Nair* 16715; Maran Pass 4600 m, *N. C. Nair* 16774; Chandratal 4169 m, *N. C. Nair* 16766.

E. roseum (Schreb.) Pers. Syn. 1: 410, 1805; Clarke, 584. *Chamenerion roseum* Schreb. in Specil. Fl. Lips. 147, 1771.

Koti 2700 m, *N. C. Nair* 16564; Dadarphoo 3375 m, *N. C. Nair* 16610; Chhatru 3350 m, *N. C. Nair* 16651; Kunzum area 3975 m, *N. C. Nair* 16707, 16715a.

E. roseum (Schreb.) Pers. var. **dalhousianum** Clarke, 584.
Rahla 2900 m, *N. C. Nair* 16535.

CUCURBITACEAE

Herpetospermum pedunculosum (Seringe) Clarke in J. Linn. Soc. 15: 115, 1876; Chakrav. in Rec. Bot. Surv. India 17: 68, 1959. *Bryonia pedunculosa* Ser. in DC. Prodr. 3: 306, 1828; *Herpetospermum caudigerum* Wall. ex Clarke in Hook. f. Fl. Brit. Ind. 2: 613, 1879.

Manali 2200 m, *N. C. Nair* 17154.

UMBELLIFERAE

Bupleurum falcatum Linn. var. **gracillinum** (Klotzsch) Wolff in Pflanzenr. 43: 132, 1910. *B. gracillinum* in Klotz. Reise Pr. Waldem. 148, t. 50, 1862. *B. falcatum* Linn. var. *nigrocarpa* (Jacq.) Clarke in Hook. f. Fl. Brit. Ind. 2: 676, 1879.

In crevices of rocks; Rahla 2800 m, *N. C. Nair* 16605; Dadarphoo 3400 m, *N. C. Nair* 16605; Kunzum area 3950 to 4535 m, *N. C. Nair* 16717, 16798, 16813; Kunzum area 3950 to 4535 m, *N. C. Nair* 16717, 16798, 16813.

B. falcatum Linn. var. **hoffmeisteri** (Klotzsch) Clarke, 676; Wolff 132. *B. hoffmeisteri* Klotz. in Reise Pr. Waldem. 147, t. 52, 1862.

Koti 2600 m, *N. C. Nair* 17114; Koksar 3450 m, *N. C. Nair* 16557; Kunzum hills 4225 m, *N. C. Nair* 16721.

B. longicaule Wall. var. **himalayense** (Klotzsch) Clarke, 677. *B. himalayense* Klotzsch 146.

Koksar 3375 m, *N. C. Nair* 7024.

Carum carvi Linn. Sp. Pl. 263, 1753; Clarke, 680.

Dadarphoo 3530 m, *N. C. Nair* 16903; Chhatru 3450 m, *N. C. Nair* 16957.

Chaerophyllum acuminatum Lindl. in Royle, Ill. 232, 1835; Clarke, 691.

Koksar 3400 m, *N. C. Nair* 16463; between Rohtang Pass and Koksar 3800 m, *N. C. Nair* 17060; Rohtang Pass 4075 m, *N. C. Nair* 17066.

Heracleum candicans Wall. ex DC. Prodr. 4, 192, 1830; Clarke 714.

Koksar 3425 m, *N. C. Nair* 17044; Chotadara 3850 m, *N. C. Nair* 16858; Dadarphoo 3500 m, *N. C. Nair* 16922.

Ligusticum thomsonii Clarke, in Fl. Brit. Ind. 2: 698, 1879.

Dadarphoo 3530 m, *N. C. Nair* 16911.

L. elatum Clarke in Fl. Brit. Ind. 2: 698, 1879.

Chotadara 3850 m, *N. C. Nair* 16869; between Chhatru and Chotadara 3530 m, *N. C. Nair* 16890. Dadarphoo 3580 m, *N. C. Nair* 16898, 16914.

Pimpinella diversifolia DC. Prodr. 4: 122, 1830; Clarke, 688. *P. sinica* Hance in Seem. J. Bot. 113, 1868.

Koti 2700 m, *N. C. Nair* 16419.

Pleurospermum stellatum (Don.) Benth. ex Clarke, loc. cit. 704. *Selinum stellatum* Don. Prodr. 185, 1825. *Hymenolaena stellata* (Don.) Lindl. in Royle, Ill. 233, 1835.

Kunzum Pass 4325 m, *N. C. Nair* 16727; Chhatru 3450 m, *N. C. Nair* 16957.

Selinum tenuifolium Wall. ex DC. Prodr. 4: 181, 1830; Clarke, 700. *S. candollii* Edgew. in Trans. Linn. Soc. 20: 55, 1846 non DC. *Peucidanum wallichianum* DC. Prodr. 4: 181, 1830. *Pleurospermum cicutaricum* Lindl. in Royle, Ill. 233, 1835. *Oreocome candolliana* Edgew. 55.

Shepherds consider this to be the best fodder for sheep. Chhatru 3450 m, *N. C. Nair* 16956; Chotadara 3850 m, *N. C. Nair* 16869.

S. vaginatum (Edgew.) Clarke, loc. cit. 700. *Cortia vaginata* Edgew. in Trans. Linn. Soc. 20: 55, 1851.

Koksar 3375-3425 m, *N. C. Nair* 17025, 17034; Dadarphoo 3375 m, *N. C. Nair* 16642.

RUBIACEAE

Galium aparine Linn. Sp. Pl. 108, 1753; Boiss. Fl. Orient. 3: 68, 1853; Hook. f. Fl. Brit. Ind. 3: 205, 1881.

Koksar 3375-3400 m, *N. C. Nair* 16471, 16548, 17003; Dadarphoo 3400 m, *N. C. Nair* 1663; Chotadara 3630, *N. C. Nair* 16680.

G. boreale Linn. Sp. Pl. 108, 1753; Boiss. loc. cit. 48; Hook. f. 205.

Koksar 3400 m, *N. C. Nair* 17001.

G. serpylloides Royle ex Hook. f. Fl. Brit. Ind. 3: 207, 1881.

Dadarphoo 3400 m, *N. C. Nair* 16616.

DIPSACACEAE

Scabiosa speciosa Royle, Ill. 245, t. 55, f. 2, 1835; Clarke in Fl. Brit. Ind. 3: 219, 1881.

Common. Koksar 3450 m, *N. C. Nair* 16558, Chhatru 3375 m, *N. C. Nair* 16661; Dadarphoo 3400 m, *N. C. Nair* 16635.

COMPOSITAE

Achillea millefolium Linn. Sp. Pl. 899, 1753; Clarke, Comp. Ind. 143, 1876; Hook. f. Fl. Brit. Ind. 3: 312, 1881.

Common on slopes. Koti 2700 m, *N. C. Nair* 16403; Koksar 3325 m, *N. C. Nair* 16561; Dadarphoo 3530 m, *N. C. Nair* 16918; Chhatru 3325 m, *N. C. Nair* 16593.

Allardia glabra Decne. in Jacq. Voy. Bot. 88, t. 96, 1844; Clarke, 145 excl. syn. *roylei*; Hook. f. 313.

In rocky places. Maran Pass 4600 m, *N. C. Nair* 16747.

A. tomentosa Decne. loc. cit. 87, t 95; Clarke 144; Hook. f. 313.

Common on the slopes. Between Kunzum Pass and Shitikar 3975-4325 m, *N. C. Nair* 16701, 16718.

Anaphalis busua (Buch.-Ham.) Hand.-Maz. Symb. Sin. 1104, 1936; *Gnaphalium busua* Buch.-Ham. in D. Don, Prodr. Fl. Nep. 173, 1825. *A. araneosa* DC. Prodr. 6: 109, 1838; Clarke 109; Hook. f. 283.

Koti 2650-2700 m, *N. C. Nair* 16417, 17099; Koksar 3425 m, *N. C. Nair* 17045; Chhatru 3325 m, *N. C. Nair* 16598.

A. contorta Hook. f. Fl. Brit. Ind. 3: 284, 1881.

Rahla 2800 m, *N. C. Nair* 16510; Koksar 3300 m, *N. C. Nair* 16566; Chhatru 3375 m, *N. C. Nair* 16663.

Anaphalis cuneifolia Hook. f. Fl. Brit. Ind. 3: 280, 1881.
Chhatru 3325 m, *N. C. Nair* 16596; Chotadara 3850 m, *N. C. Nair* 16861; Shitikar 4000 m, *N. C. Nair* 16827.

A. nepalensis (Spreng.) Hand.-Maz. Symb. Sin. 1099, 1936. *Helichrysum nepalense* Spreng. Syst. 3: 485, 1826. *A. nubigena* DC. Prodr. 6: 272, 1838; Hook. f. 279.
Kunzum Pass 4025-4535 m, *N. C. Nair* 16709, 16743; Maran Pass 4600 m, *N. C. Nair* 16748; Chandratal 4169 m, *N. C. Nair* 16758.

A. triplinervis Clarke var. **intermedia** (DC.). Airy-Shaw in Curtis's Bot. Mag. t. 9396, 1935. *Antennaria triplinervis* var. *intermedia* DC. Prodr. 6: 272, 1838. *Anaphalis nubigena* DC. var. *intermedia* (DC.) Hook. f. 280.
Chhatru 3375 m, *N. C. Nair* 16654.

Arctium lappa Linn. Sp. Pl. 816, 1753; Clarke, Comp. Ind. 212, 1876; Hook. f. 359.
Very rare. Koksar 3425 m, *N. C. Nair* 17053.

Artemisia macrocephala Jacq. ex Bess in Bull. Soc. Nat. Mosc. 9: 28, 1836; Hook. f. 329.
Shitikar 4000 m, *N. C. Nair* 16823.

A. maritima Linn. Sp. Pl. 846, 1753; Clarke, Comp. Ind. 259, 1876; Hook. f. 323.
Dadarphoo, *N. C. Nair* 16902.

A. parviflora Buch.-Ham. ex Roxb. Fl. Ind. 3: 420, 1832; Clarke, 159; Hook. f. 322.
Chhatru 3325 m, *N. C. Nair* 16580.

A. sacrorum Ledeb. in Mem. Acad. Petersch. 5: 571, 1805; Hook. f. 326.
In crevices of rocks. Between Chhatru and Chotadara 3530 m, *N. C. Nair* 16891, 16894, 16971.

Aster heterochaeta Benth. ex Hook. f. Fl. Brit. Ind. 3: 250, 1881.
Rare. Chandratal lake area 4169 m, *N. C. Nair* 16768.

A. pseudamellus Hook. f. Fl. Brit. Ind. 3: 249, 1881.
Dorni 3375 m, *N. C. Nair* 16987.

Bidens tripartita Linn. Sp. Pl. 831, 1753; Clarke, Comp. Ind. 140, 1876; Hook. f. 309.
Koti 2700 m, *N. C. Nair* 16438, 17129.

Brachyactis robusta Benth. in Hook. Ic. Pl. t. 1106, 1876; Hook. f. 254. *Conyza pubescens* DC. Prodr. 5: 381, 1836.
Koksar 3375 m, *N. C. Nair* 16486, 16546; Dadarphoo 3375 m, *N. C. Nair* 16609; Chhatru 3325 m, *N. C. Nair* 16574, 16582.

Crepis flexuosus (DC.) Benth. et Hook. f. ex Clarke Comp. Ind. 254, 1876. *Barkhausia flexuosa* DC. Prodr. 7: 155, 1836. *Crepis glauca* (Edgew.) Benth. ex Hook. f. loc. cit. 394. *Youngia glauca* Edgew. Trans. Linn. Soc. 20: 79, 1846.
Common in crevices of rocks. Kunzum area 3635 m, *N. C. Nair* 16686; Shitikar 3950 m, *N. C. Nair* 16832.

C. multicaulis Ledeb. subsp. **congesta** (Regl.) Babcock in Uni. Calif. Pub. Bot. 19 (11): 401, 1941. *C. multicaulis* var. *congesta* Regl. Bull. Soc. Nat. Moscou. 40: 178, 1867.
Chotadara 3850 m, *N. C. Nair* 16877.

C. multicaulis Ledeb. subsp. **genuina** (Regl.) ex Regel, Rach et Herder, Bull. Soc. Nat. Moscou. 32: 216, 1859. *C. stoliczkai* Clarke, Comp. Ind. 255, 1876; Hook. f. 396.
Maran Pass 4550 m, *N. C. Nair* 16752.

Erigeron alpinus Linn. Sp. Pl. 864, 1753; Boiss. Fl. Orient. 3: 165, 1856; Clarke 52; Hook. f. 255.

Brachyactis roylei (DC.) Wendebo in Nytt Mag. Bot. 1: 62, 1952. *Conyza roylei* DC. Prodr. 5: 381, 1836. *B. umbrosa* (Kar. et Kir.) Benth. in Hook. Ic. Pl. t. 1106, 1876; Hook. f. 253. *Conyza umbrosa* Kar. et Kir. in Ledeb. Fl. Ross. 2: 498, 1845. *Erigeron umbrosum* (Kar. et Kir.) Buser in Boiss. Suppl. Fl. Orient. 290, 1881.
Koksar 3400 m, *N. C. Nair* 16499; Chotadara 3630 m, *N. C. Nair* 16671, 16672, 16879; Batal 3985 m, *N. C. Nair* 16810.

Carduus nutans Linn. Sp. Pl. 82, 1753; DC. Prodr. 6: 621, 1838; Clarke, Comp. Ind. 215, 1876; Hook. f. 361.
Rare. Dadarphoo 3400 m, *N. C. Nair* 16636.

Chrysanthemum richteria Benth. ex Clarke, Comp. Ind. 148, 1876; Hook. f. 315.
Common on hill slopes. Shitikar 400 m, *N. C. Nair* 16826; Batal 4000 m, *N. C. Nair* 16864.

Cousinia thomsoni Clarke, Comp. Ind. 213, 1876; Hook. f. 360. *C. brandisii* Clarke 215.
Chhatru 3325 m, *N. C. Nair* 16583, 16586.
Koksar 3400 m, *N. C. Nair* 17021; between Koksar and Rohtang Pass 3600 m, *N. C. Nair* 17056; Kunzum Pass 4025 m, *N. C. Nair* 16708.

Erigeron alpinus Linn. var. **uniflora** Hook. f. Fl. Brit. Ind. 3: 256, 1881.
Chhatru 3380 m, *N. C. Nair* 16649; Koksar 3400 m, *N. C. Nair* 16482, 16572.

E. andryaloides (DC.) Benth. ex Clarke, Comp. Ind. 52, 1876; Hook. f. 255; *Conyza andryaloides* DC. Prodr. 5: 377, 1836.
Kunzum Pass 4535 m, *N. C. Nair* 16787, 16800.

E. canadensis Linn. Sp. Pl. 863, 1753; Boiss. Fl. Orient. 3: 163, 1856; Hook. f. 254.
Koti 2700 m, *N. C. Nair* 16423.

E. crispus Pourr in Mun-Acad. Toulouse 3: 318, 1788. *E. linifolius* Willd. Sp. Pl. 3: 1955, 1800; Hook. f. 254.
Koti 2675 m, *N. C. Nair* 17107.

E. multicaulis Wall. ex DC. Prodr. 5: 292, 1836.

E. alpinus Linn. var. *multicaulis* (Wall.) Hook. f. 255.
Dadarphoo 3530 m, *N. C. Nair* 16912.

Erigeron multiradiatus Benth. ex Clarke Comp. Ind. 56, 1876; Hook. f. 256.
Koti 2700 m, *N. C. Nair* 16410, 16442; Rahla 2900 m, *N. C. Nair* 16531.

Galinsoga parviflora Cav. Ic. et Descr. Pl. 3: 41, 1794; DC. Prodr. 5: 677, 1836; Clarke 112; Hook. f. 311.
Koti 2600 to 2700 m, *N. C. Nair* 16439, 17110.

Gnaphalium affine D. Don, Prodr. Fl. Nep. 173, 1825. *G. luteoalbum* sensu Hook. f. 288 non Linn.
Koti 27700 m, *N. C. Nair* 16414.

G. thomsoni Hook. f. Fl. Brit. Ind. 3: 290, 1881. *G. uliginosum* Clarke, Comp. Ind. 115, 1876 non Linn.
Between Rohtang Pass and Koksar 3680 m, *N. C. Nair* 17059; Chhatru 3325 m, *N. C. Nair* 16570; between Chotadara and Batal 3900 m, *N. C. Nair* 16836, 16838; Shitikar 3950 m, *N. C. Nair* 16816, 16818.

Jurinea ceratocarpa Benth. var. **depressa** Clarke ex Hook. f. Fl. Brit. Ind. 3: 378, 1881.
Kunzum Pass 4025 m, *N. C. Nair* 16687 A-D.; Shitikar 3985 m, *N. C. Nair* 16811.

Hieracium umbellatum Linn. Sp. Pl. 804, 1753; Boiss. Fl. Orient. 3: 878, 1856; Clarke, Comp. Ind. 2: 57, 1876 excl. syn. and var. y; Hook. f. 400.
Common on hill slopes. Chotadara 3850 m, *N. C. Nair* 16859; Chhatru 3325 m, *N. C. Nair* 16930; Dorni 3700 m, *N. C. Nair* 16988.

Lactuca decipiens Clarke, Comp. Ind. 266, 1876; Hook. f. 407.
Koksar 3400 m, *N. C. Nair* 17011.

L. hastata DC. Prodr. 7: 139, 1839; Clarke 267; Hook. f. 407.
Koti 2600 m, *N. C. Nair* 17111.

L. macrorhiza (Royle) Hook. f. Fl. Brit. Ind. 3: 408, 1881. *Mulgedium macrorhizum* Royle, Ill. 251, t. 61, 1835.
Dadarphoo 3400 m, *N. C. Nair* 16617; Chotadara 3850 m, *N. C. Nair* 16872, 16880, 16919; between Kunzum Pass and Shitikar 4225 m, *N. C. Nair* 16694.

Leontopodium alpinum Cass. in Dict. Sc. Nat. 25: 474, 1822; DC. Prodr. 6: 275, 1838; Clarke, Comp. Ind. 100, 1876; Hook. f. 279.
Kunzum Pass 4535 m, *N. C. Nair* 16732; Chandratal 4169 m, *N. C. Nair* 16763.

Myriactis nepalensis Less. in Linnaea 6: 128, 1831; Clarke loc. cit. 38; Hook. f. loc. cit. 247.
Koti 2900 m, *N. C. Nair* 16415, 16416; Rahla 2800 m, *N. C. Nair* 16507.

M. wallichii Less. loc. cit. 129; Hook. f. 247. Hooker (l.c.) remarks that this can scarcely be more than a form of *M. nepalensis* "but if more than one species is to be kept, this must be one". Collet in Fl. Simlensis 249, 1921 merged the two species.
Koti 2700 m to 2800 m, *N. C. Nair* 16428, 17098.

Saussurea piptathera Edgew. in Trans. Linn. Soc. 20: 76, 1846; Hook. f. 372. *Aplotaxis discolor* DC. Prodr. 6: 541, 1838.
Koksar 3428 m, *N. C. Nair* 17029.

S. lappa (Decne.) Clarke, Comp. Ind. 233, 1876; Hook. f. 376. *Aplotaxis lappa* Decne. in Jacq. Voy. Bot. 96, 104, 1844.
Wild as well as cultivated in several places in Lahul for the sake of its tuberous taproot called as *Kut*. In some cases this plant is the principal source of income to the people. Chhatru 3375 m, *N. C. Nair* 16669.

Siegesbeckia orientalis Linn. Sp. Pl. 900, 1753; Wight, Icon. t. 1103, 1846; Hook. f. 304.
Koti 2700 m, *N. C. Nair* 16437.

Senecio chrysanthemoides DC. Prodr. 6: 365, 1838; Hook. f. 339.
Koksar 3400 m, *N. C. Nair* 17014; Dadarphoo 3400 to 3530 m, *N. C. Nair* 16640, 16906, 16908, 16915.

S. kumthianus Wall. ex DC. Prodr. 6: 369, 1838; Clarke, Comp. Ind. 186, 1876; Hook. f. 354.
Koksar 3425 m, *N. C. Nair* 17035; between Dorni and Chhatru 3325 m, *N. C. Nair* 16985.

S. pedunculatus Edgew. in Trans. Linn. Soc. 21: 74, 1846; Clarke 195; Hook. f. 342.
Common on hill slopes. Koksar 3425 m, *N. C. Nair* 17049; Dadarphoo 3400 m, *N. C. Nair* 16631, 16924; Chotadara 3850 m, *N. C. Nair* 16870, 16897; Kunzum Pass 4535 m, *N. C. Nair* 16788; Chandratal 4169 m, *N. C. Nair* 16754.

Tanacetum nubigenum Wall. in DC. Prodr. 6: 130, 1838; Clarke 153; Hook. loc. cit. 318.
Shitikar 3950 m, *N. C. Nair* 16831.

T. senecionis Gay in DC. Prodr. 6: 129, 1838; Hook. f. 319. *T. tomentosum* DC. loc. cit. 130.
Koksar 3400 m, *N. C. Nair* 17036.

T. tripinnatifidum Oliver in Hook. Icon. Pl. 24, t. 2306, 1894.
Koksar 3400 m, *N. C. Nair* 17015, 17041.

Taraxacum officinale Weber in Wigg. Prim. Fl. Holsat. 56, 1780; Clarke, Comp. Ind. 258, 1876; Hook. f. Fl. Brit. Ind. 3: 401, 1881.
Koksar 3400 m, *N. C. Nair* 16462; approach to Kunzum Pass 3975 m, *N. C. Nair* 16714; Chandratal lake area 4169 m, *N. C. Nair* 16767.

T. officinale Weber var. **parvula** Hook. f. Fl. Brit. Ind. 3: 401, 1881.

Rahla 2900 m, *N. C. Nair* 16537a; Chhatru 3350 m, *N. C. Nair* 16861.

Taraxacum wattii Hook. f. loc. cit. 402.
Very rare. Rahla 2900 m, *N. C. Nair* 16537b.

Tragopogon gracile D. Don in Mem. Wern. Soc. 3: 407, 1820; Clarke, Comp. Ind. 278, 1876; Hook. f. 417.
Rare. Chandratal 4169 m, *N. C. Nair* 16756.

CAMPANULACEAE

Campanula argyrotricha Wall. ex DC. Prodr. 7: 473, 1839; Clarke in Hook. f. Fl. Brit. Ind. 3: 441, 1881.
Koksar 3425 m, *N. C. Nair* 17037; Dadarphoo 3530 m, *N. C. Nair* 16917.

C. aristata Wall. in Roxb. Fl. Ind. 2: 98, 1832; Clarke, 441.
Koksar 3425 m, *N. C. Nair* 17051.

C. colorata Wall. in Roxb. Fl. Ind. 2: 101, 1832; Clarke, 440.
Koti 2700 m, *N. C. Nair* 16436, 17106.

Cyananthus lobatus Wall. ex Benth. in Royle, Ill. 309, t. 69, fig. 1, 1836; Clarke, 433.
Corolla blue. Rohtang Pass 4000 m, *N. C. Nair* 17078.

PRIMULACEAE

Primula minutissima Jacq. ex DC. Prodr. 8: 42, 1844; Hook. f. Fl. Brit. Ind. 3: 494, 1882.
Kunzum Pass 3950-4535 m, *N. C. Nair* 16741, 16805.

P. reptans Hook. f. Fl. Brit. Ind. 3: 494, 1822.
Kunzum area 3950 m, *N. C. Nair* 16805.

ERICACEAE

Cassiope fastigiata (Wall.) D. Don in Edinb. New Philos. J. 17: 157, 1834; Clarke in Hook. f. Fl. Brit. Ind. 3: 459, 1882. *Andromeda fastigiata* Wall. in Asiat. Research. 13: 394, 1820; Royle, Ill. 260, t. 63. f. 1, 1835.
Chhatru 3450 m, *N. C. Nair* 16954, 16963-16965.

Gaultheria trichophylla Royle, Ill. 200 t. 63, f. 3, 1839; Clarke, 457.
Between Rohtang Pass and Koksar 4475 m, *N. C. Nair* 17071; Chhatru 3350 m, *N. C. Nair* 16953.

Rhododendron anthopogon D. Don in Mem. Wern. Soc. 3: 409, 1821; Royle, Ill. 260, t. 64, fig. 2, 1834; Clarke, 472.
Koksar 3400 m, *N. C. Nair* 17020.

R. campanulatum D. Don, loc. cit. 410. Clarke, 466.
Used as fire wood. Dorni 3800 m, *N. C. Nair* 16993; Chhatru 3375 m, *N. C. Nair* 16670.

ASCLEPIADACEAE

Cynanchum vincetoxicum (Linn.) Pers. Syn. 1: 274, 1805; Hook. f. Fl. Brit. Ind. 4: 22, 1883. *Asclepias vincetoxicum* Linn. Sp. Pl. 216, 1753.
Koti 2800 m, *N. C. Nair* 17096.

GENTIANACEAE

Gentiana marginata Griseb. Gentian. 275, 1839. *G. carinata* Griseb. var. *marginata* (Griseb.) Clarke in Hook. f. Fl. Brit. Ind. 4: 113, 1883.
In moist situations; Chandratal 4169 m, *N. C. Nair* 16765.

G. moorcroftiana Wall. ex Griseb. Gentian. 243, 1839; Clarke, 108.
Near water margin. Maran Pass 4460 m, *N. C. Nair* 16753; Kunzum Pass 4535 m, *N. C. Nair* 16797; Shitikar 3950 m, *N. C. Nair* 16804; between Chhatru and Chotadara 3530 m, *N. C. Nair* 16892.

G. pygmaea Clarke in Hook. f. Fl. Brit. Ind. 4: 111, 1883.
Near water margin, mixed with moss, rare. Kunzum area 3975 m, *N. C. Nair* 16712.

G. sororcula Burkill in J. As. Soc. Beng. n.s. 2: 315, 1906.
Near water margin of rivulets. Kunzum area 3975 m, *N. C. Nair* 16713a.

G. tenella Rottb. in Kiob. Skr. Selsk. 10: 436, 1770; Clarke in Hook. f. Fl. Brit. Ind. 4: 109, 1883.
Common on hill slopes. Chhatru 3400 m, *N. C. Nair* 16661; Kunzum hills 4025 m, *N. C. Nair* 16688; Kunzum area 3950 m, *N. C. Nair* 16806; Maran Pass 4500 m, *N. C. Nair* 16781.

Lomatogonium carinthiacum (Wulf.) A. Br. in Fl. 13: 221, 1830. *Pleurogyna carinthiaca* (Wulf.) Griseb. Gentian. 310, 1839; Clarke 120. *Swertia carinthiaca* Wulf. in Jacq. Misc. 2: 53, 1781.
Kunzum Pass 4535 m, *N. C. Nair* 16738; Maran Pass 4550 m, *N. C. Nair* 16777; Kunzum hills 3950 m, *N. C. Nair* 16807, 16708; Shitikar 3950 m, *N. C. Nair* 16809; between Chhatru and Chotadara 3530 m, *N. C. Nair* 16887; Koksar 3400 m, *N. C. Nair* 17023.

L. thomsoni (Clarke) Fernald in Rhodora 21: 197, 1919. *Pleurogyna thomsoni* Clarke in Hook. f. Fl. Brit. Ind. 4: 120, 1883.
Maran Pass 4500 m, *N. C. Nair* 16781a.

Swertia alternifolia Royle, Ill. 278, t. 67, fig. 2, 1935; Clarke 128.
Dorni 3800 m, *N. C. Nair* 16995; Koksar 3400 m, *N. C. Nair* 17016.

S. cordata (Griseb.) Clarke in Hook. f. Fl. Brit. Ind. 4: 123, 1883. *Ophelia cordata* Griseb. Gentian. 315, 1839; DC. Prodr. 9: 124, 1845.
Common. Koti 2700 m, *N. C. Nair* 16420.

S. purpurascens (D. Don) Clarke, loc. cit. 121; *Ophelia purpurascens* D. Don in Trans. Linn. Soc. 17: 526, 1837; Griseb. 315; DC. 124.
Koti 2675 m, *N. C. Nair* 16407; Rahla 2850 m, *N. C. Nair* 16530.

BORAGINACEAE

Adelocaryum anchusoides (Lindl.) Brand in Fedde Repert. 13: 547, 1915. *Cynoglossum anchusoides* Lindl. in Bot. Reg. t. 14, 1842. *Paracaryum heliocarpum* A. Kern. in Ber. Naturv. ver. innsbruck 1: 105, 1870; Clarke in Hook. f. Fl. Brit. Ind. 4: 161, 1883.
Koksar 3450 m, *N. C. Nair* 16556.

Cynoglossum lanceolatum Forsk. Fl. Aeg. 41, 1775; Clarke, 156.
Rohtang Pass 3600 m, *N. C. Nair* 17055.

C. micranthum Desf. Cat. Hort. Par. 220, 1804; Clarke 156.
Koti 2600 m, *N. C. Nair* 17121; Chhatru 3350 m, *N. C. Nair* 16936.

C. zeylanicum Thunb. ex Lehm. in Neue Schrift. Naturf. Ges. Halle 3: 20, 1817; *C. furcatum* Wall. in Roxb. Fl. Ind. 2: 6, 1832; Clarke 155.
Koti 2700 m, *N. C. Nair* 16434; Rahla 2850 m, *N. C. Nair* 16522; Koksar 3400 m, *N. C. Nair* 16458, 16464; Chhatru 3325 m, *N. C. Nair* 16600 m.

Myosotis sylvatica Hoffm. Deutsch. Fl. 1: 85, 1791; Clarke, 173.
Chhatru 3350 m, *N. C. Nair* 16644; Dadarphoo 3580 m, *N. C. Nair* 16900.

SOLANACEAE

Hyoscyamus niger Linn. Sp. Pl. 1: 179, 1753; Clarke in Fl. Brit. Ind. 4: 244, 1883.
Koksar 3360 m, *N. C. Nair* 16569.

SCROPHULARIACEAE

Euphrasia officinalis Linn. Sp. Pl. 604, 1753; Hook. f. Fl. Brit. Ind. 4: 305, 1884.
This species has been split into a number of separate species which are very difficult to distinguish. For details consult Pennell Acad. Nat. Sci. Phil. Monogr. 5: 99-113, 1943.
Koksar 3400 m, *N. C. Nair* 16477; Chhatru 3350 m, *N. C. Nair* 16579, 16949, 16969; Dadarphoo 3530 m, *N. C. Nair* 16913.

Lindernia nummularifolia (Don.) Wettstein in Naturl. Pflanzenfam. 4(3b); 79, 1891. Pennell loc. cit. 30; *Vandellia nummularifolia* D. Don, Prodr. 86, 1825. *V. sessiliflora* Benth. Scroph. Ind. 37, 1835; Hook. f. 282. *V. minima* Royle ex Benth. Scroph. Ind. 37, 1835.
In moist places. Rare. Koti, *N. C. Nair* 17093.

Mazus dentatus Wall. ex Benth. Scroph. Ind. 27, 1835; Hook. f. 260; Pennell 33.
Previously known only from Kumaon eastwards. Koti 2625, *N. C. Nair* 17128.

Pedicularis gracilis Wall. ex Benth. Scroph. Ind. 52, 1835; Hook. f. 307; Pennell 131.
Rahla 2800-2900 m, *N. C. Nair* 16512a, 16528.

P. punctata Decne. in Jacq. Voy. 117, Pl. 122, 1844; Pennell 154.
Rahla 2800 m, *N. C. Nair* 16512; Chhatru 3350 m, *N. C. Nair* 16650, 16655; Kunzum Pass 4535 m, *N. C. Nair* 16745.

Scrophularia calycina Benth. Scroph. Ind. 18, 1835; Hook. f. 253; Pennell 43.
Koksar 3425 m, *N. C. Nair* 17042.

S. decomposita Royle ex Benth. Scroph. Ind. 18, 1835; Pennell 55. *S. lucida* Hook. f. 256, non Linn.
Batal 400 m, *N. C. Nair* 16866.

S. edgeworthii Benth. in DC. Prodr. 10: 304, 1846; Hook. f. 255; Pennell 44.
Koti 2700 m, *N. C. Nair* 16433; Rahla 2800 m, *N. C. Nair* 16514.

S. himalayensis Royle in Benth. loc. cit. 18; DC. 304; Hook. f. 255.
Koti 2675 m, *N. C. Nair* 17109.

Verbascum thapsus Linn. Sp. Pl. 177, 1753; DC. 225; Hook. f. 250; Pennell 40.
Chotadara 3630 m, *N. C. Nair* 16682.

Veronica beccabunga Linn. Sp. Pl. 12, 1753; DC. 468; Hook. f. 293; Pennell 88.
Chhatru 3400 m, *N. C. Nair* 16658, 16659; Kunzum area 3975 m, *N. C. Nair* 16706.

V. biloba Linn. Mant. Plant. 172, 1771; DC. 485; Hook. f. 294, 1884; Pennell 80.
Koksar 3400 m, *N. C. Nair* 16549; Dadarphoo 3400 m, *N. C. Nair* 16632; approach to Kunzum Pass 4025 m, *N. C. Nair* 16690; Maran Pass 4600 m, *N. C. Nair* 16772.

V. javanica Blume, Bijdr. Fl. Nederl. India 742, 1826; Pennell Acad. Nat. Sci. Phil. Monogr. 5: 87, 1943. *V. deltigera* Wall. in Benth. Scroph. Ind. 45, 1835; Hook. f. 292. *V. lanosa* Benth. 45.
Koksar 3400-3425 m, *N. C. Nair* 16492, 17033; Chhatru 3325 m, *N. C. Nair* 16583, 16927.

Wulfenia amherstiana Wall. ex Benth. 46; Hook. f. 291; Pennell 67.
Rahla 2900 m, *N. C. Nair* 16533.

SELAGINACEAE

Lagotis glauca Gaertn. in Nov. Comm. Petrop. 14: 533, t. 18, fig. 2, 1770; Hook. f. in Fl. Brit. Ind. 4: 1885.
Rohtang Pass 4000 m, *N. C. Nair* 17074.

ACANTHACEAE

Strobilanthes atropurpureus Nees in Wall. Pl. As. Rar. 3: 86, 1832; Clarke in Hook. f. Fl. Brit. Ind. 4: 472, 1884 including *S. wallichii* Nees var. *microphylla* Nees; Coll. et Hems. Fl. Siml. 374, 1902.
Koti 2600 m, *N. C. Nair* 17125.

LABIATAE

Clinopodium umbrosum (M. Bieb.) C. Koch. in Linnaea 2: 673, 1848. *Melissa umbrosa* M. Bieb. Fl. Tour. Cauc. 2: 63, 1808. *Calamintha umbrosa* Fisch. et Mey. Ind. Sem. 6: 6, 1840; Hook. f. Fl. Brit. Ind. 4: 650, 1885; Mukerj. in Rec. bot. Surv. India 14: 98, 1940.

Koti 2700 m, *N. C. Nair* 16447, Rahla 2800 m, *N. C. Nair* 16508.

Clinopodium vulgare Linn. Sp. Pl. 587, 1753. *Calamintha clinopodium* Benth. in DC. Prodr. 12: 233, 1848; Hook. f. 650; Mukerj. 98.
Koksar 3425 m, *N. C. Nair* 16552, 17022.

Elsholtzia fructicosa (Don.) Rehder in Sargent Pl. Wils. 3: 381, 1916; *Perilla fructicosa* D. Don, Prodr. Fl. Nepal. 115, 1825. *E. polystachya* Benth. Lab. Gen. et Sp. 161, 1832-1836; Hook. f. 643; Mukerj. 89.
Koti 2800 m, *N. C. Nair* 17097.

E. patrini (Lep.) Garcke, Ill. Fl. Deutschl. 307, 1865. *Mentha patrini* Lep. in Nova Acta Petrop. 1: 336, 1783. *E. cristata* Willd. in Roem. et listeri Mag. 4: 5, 1790; Hook. f. 643; Mukerj. 92.
Between Rahla and Madi 3900 m, *N. C. Nair* 17085.

E. strobilifera Benth. Lab. Gen. et Sp. 163, 1832-1836; Hook. f. 645; Mukerj. 92.
Koti 2700 m, *N. C. Nair* 17094; Rahla 3600 m, *N. C. Nair* 17092.

Lamium album Linn. Sp. Pl. 579, 1753; Hook. f. 679. Mukerj. 161.
Rahla 3600 m, *N. C. Nair* 17091.

Leonurus cardiaca Linn. Sp. Pl. 584, 1753; Hook. f. 678; Mukerj. 192.
Rahla 2850 m, *N. C. Nair* 16520; Between Rahla and Madi 2900 m, *N. C. Nair* 17081.

Mentha royleana Benth. in Wall. Pl. As. Rar. 1: 29, 1830. *M. sylvestris* sensu Hook. f. non Linn. var. *royleana* (Benth.) Hook. f. Fl. Brit. Ind. 647, 1885; Mukerj. 87.
Koksar 3400 m, *N. C. Nair* 16491, 17032; Dadarphoo 3500 m, *N. C. Nair* 16909.

Micromeria biflora (Wall. ex D. Don) Benth. Lab. Gen. et Sp. 378, 1832-1836; Hook. f. 650; Mukerj. 96; *Thymus biflorus* Wall. ex D. Don, Prodr. Fl. Nepal. 112, 1825.
Koti 2700 m, *N. C. Nair* 16402.

Nepeta discolor Royle ex Benth. in Hook. Bot. Misc. 3: 378, 1883; Hook. f. 659; Mukerj. 124.
Kunzum Pass 4400 m, *N. C. Nair* 16719.

N. eriostachya Benth. Lab. Gen. et Sp. 734, 1832-1836; Hook. f. 657; Mukerj. 123.
Rahla 2850-3000 m, *N. C. Nair* 16519, 17090; Koksar 3425 m, *N. C. Nair* 16555; Kunzum Pass 4225 m, *N. C. Nair* 16693, 16819, 16820; Batal 4000 m. *N. C. Nair* 16863, Chotadara 3870 m, *N. C. Nair* 16875.

N. govaniana Benth. Lab. Gen. et Sp. 482, 1832-1836; Hook. f. 663; Mukerj. 129.
Rahla 2875 m, *N. C. Nair* 16542.

N. spicata Benth. in Wall. Pl. As. Rar. 1: 64, 1832; Hook. f. 659; Mukerj. 123.
Manali 2200 m, *N. C. Nair* 17153; Koti 2700 m, *N. C. Nair* 16429, 16445; Koksar 3400 m, *N. C. Nair* 16468; Chhatru 3325 m, *N. C. Nair* 16599.

Origanum vulgare Linn. Sp. Pl. 590, 1753; Hook. f. 648; Mukerj. 94.
Koti 2675 m, *N. C. Nair* 17108.

Phlomis bracteosa Royle ex Benth. Hook. Bot. Misc. 3: 383, 1833; Hook. f. 693; Mukerj. 197.
Koksar 3400 m, *N. C. Nair* 16478; Chhatru 3375-3400 m, *N. C. Nair* 16643, 16958.

Plectranthus coetsa Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 117, 1825; Hook. f. 619; Mukerj. 44.
Manali 2200 m, *N. C. Nair* 17148.

P. rugosus Wall. Pl. As. Rar. 2: 17, 1832; Hook. f. 620; Mukerj. 43.
Manali 2200 m, *N. C. Nair* 17136.

Prunella vulgaris Linn. Sp. Pl. 837, 1753; *Brunella vulgaris* Linn. in Hook. f. Fl. Brit. Ind. 4: 670, 1885; Mukerj. 148.
Koti 2700 m, *N. C. Nair* 16412, 16443.

Salvia nubicola Sweet, Brit. Flow. Gard. 2: 140, 1825-1827; *S. glutinosa* sensu Hook. f. loc. cit. 653 non Linn.; Mukerj. 113.
Between Rahala and Madi 3900 m, *N. C. Nair* 17088.

Stachys melissaefolia Benth. Lab. Gen. et Sp. 535, 1832; Hook. f. 675; Mukerj. 188.
Rahla 2850 m, *N. C. Nair* 16525.

Thymus serpyllum Linn. Sp. Pl. 590, 1753; Hook. f. 649; Mukerj. 95.
Rahla 2900 m, *N. C. Nair* 16544; Between Rohtang Pass and Koksar 4475 m, *N. C. Nair* 17067; Koksar 3400 m, *N. C. Nair* 16470, 16553; Shitikar 4000 m, *N. C. Nair* 16830; Chotadara 3630 m, *N. C. Nair* 16676; Dadarphoo 3400 m, *N. C. Nair* 16603; Chandratal 4169 m, *N. C. Nair* 16761.

PLANTAGINACEAE

Plantago depressa Willd. Enum. Pl. Hort. Berol. Suppl. 8, 1813, *P. tibetica* Hook. f. Fl. Brit. Ind. 4: 706, 1885.
Maran Pass 4600 m, *N. C. Nair* 16771.

P. himalaica Pilger in Pflanzenr. 102: 63, 1937; *P. brachyphylla* Edgew. ex Decne. in DC. Prodr. 13: 696, 1852; Hook. f. 706.
Koksar 3400 m, *N. C. Nair* 17018; Chhatru 3350 m, *N. C. Nair* 16647.

P. major Linn. Sp. Pl. 112, 1753; Hook. f. 705.
Koti 2700 m, *N. C. Nair* 16432.

P. major Linn. var. **latissima** Pilger in Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 278, 1922. *P. major* Linn. var. *brevis* Pilger in Notizbl. Bot. Gart. Mus. Berlin-Dahlem 11: 1099, 1932.
Between Rohtang Pass and Koksar 4475 m,

N. C. Nair 17062; Dadarphoo 3530 m, *N. C. Nair* 16907.

CHENOPODIACEAE

Axyris amaranthoides Linn. Sp. Pl. 979, 1753; Hook. f. Fl. Brit. Ind. 4: 1886.

Common. Chotadara 3630-3850 m, *N. C. Nair* 16683, 16871.

Chenopodium album Linn. Sp. Pl. 219, 1753; Hook. f. 3.

Koksar 3400 m, *N. C. Nair* 16457; Chotadara 3850 m, *N. C. Nair* 16681, 16874; Badadara 3975 m, *N. C. Nair* 16855; Shitikar 3950 m, *N. C. Nair* 16817; Maran Pass 4500 m, *N. C. Nair* 16792.

C. botrys Linn. Sp. Pl. 219, 1753; Hook. f. 4.

Koksar 3400 m, *N. C. Nair* 16456; Chotadara 3325 m, *N. C. Nair* 16977; Chotadara 3850 m, *N. C. Nair* 16873.

C. foliosum Ascher. Fl. Brandenb. 572, 1864; *C. blitum* Hook. f. 5.

Koksar 3400 m, *N. C. Nair* 16454; Dadarphoo 3400 m, *N. C. Nair* 16629; between Batal and Kunzum Pass 3635 m, *N. C. Nair* 16685.

POLYGONACEAE

Fagopyrum cymosum Meissn. in Wall. Pl. As. Rar. 3: 63, 1832; Hook.f. Fl. Brit. Ind. 5: 55, 1886.

Manali 2300 m, *N. C. Nair* 17133; Koti 2600 m, *N. C. Nair* 17118.

F. tataricum (Linn.) Gaertn. Fruct. 2: 183, t. 119, f. 6, 1791; Hook. f. 55. *Polygonum tataricum* Linn. Sp. Pl. 364, 1753; D. Don, Prodr. 74, 1825; Meissn. Monogr. Polyg. 62, t. 4, 8, 1865.

Cultivated. Found also as escape. Rahla 2875 m, *N. C. Nair* 16543.

Oxyria digyna Hill Hort. Kew 158, 1768; Hook.f. 58.

Koksar 3400 m, *N. C. Nair* 16480; Chhatru 3325-3400 m, *N. C. Nair* 16480, 16941; Kunzum Pass 4535 m, *N. C. Nair* 16784.

Polygonum affine D. Don, Prodr. Fl. Nepal. 70, 1825; Meissn. Monogr. Polyg. 52, 1865; Hook. f. 33.

Chhatru 3325 m, *N. C. Nair* 16588; between Batal and Kunzum Pass 3975 m, *N. C. Nair* 16700; Kunzum Pass 4535 m, *N. C. Nair* 16804; Maran Pass 4600 m, *N. C. Nair* 16749.

P. alpinum All. Fl. Pedem. 1: 206, t. 68, 6. 1, 1785; Meissn. 56, t. 3; Hook. f. 49.

Between Chhatru and Chotadara 3530 m, *N. C. Nair* 16896.

P. amplexicaule D. Don, Prodr. Fl. Nepal. 70, 1825; Meissn. in Wall. Pl. As. Rar. 3: 54, 1832; Hook. f. 32.

Koti 2675 m, *N. C. Nair* 16405; Rahla 2850 m, *N. C. Nair* 16526.

P. aviculare Linn. Sp. Pl. 362, 1753; Boiss. Fl. Orient. 4: 1036, 1879; Hook. f. 26.

Abundant near streams and moist places. Koti 2700 m, *N. C. Nair* 16424, 16449; Koksar 3400 m, *N. C. Nair* 16465, 16500; Chhatru 3350 m, *N. C. Nair* 16448.

P. cognatum Meissn. Polyg. Prodr. 91, 1826; Hook. f. 26.

Koksar 3400 m, *N. C. Nair* 16474; Chhatru 3350 m, *N. C. Nair* 16645; Chotadara 3630 m, *N. C. Nair* 16678; Dadarphoo 3530 m, *N. C. Nair* 16921; Kunzum Pass 4535 m, *N. C. Nair* 16786; between Kunzum Pass and Shitikar 3975 m, *N. C. Nair* 16702, 16815; Maran Pass 4550 m, *N. C. Nair* 16775; Chandratal 4169 m, *N. C. Nair* 16760.

P. convolvulus Linn. Sp. Pl. 364, 1753; Hook. f. 53.

Manali 2200 m, *N. C. Nair* 17134.

P. delicatulum Meissn. in DC. Prodr. 14: 127, 1857; Hook. f. 24.

In moist places. Rohtang Pass 4075 m, *N. C. Nair* 17061.

P. glaciale Hook. f. Fl. Brit. Ind. 5: 41, 1886.

Between Kunzum Pass and Shitikar 4225 m, *N. C. Nair* 16692.

P. humile Meissn. in Wall. Pl. As. Rar. 3: 59, 1832; DC. Prodr. 14(1): 128, 1847; Hook. f. 41.

Koti 2675 m, *N. C. Nair* 16408.

P. molliaeforme Boiss. Diagn. Ser. 1(7): 84, 1846; Fl. Orient. 4: 1043, 1879; Meissn. in DC. Prodr. 14: 91, 1857; Hook. f. 27.

Shitikar 3950 m, *N. C. Nair* 16821.

P. nepalense Meissn. in Monogr. 84, 1826; Kitamura Faun. Fl. Nep. Him. 118, 1955. *P. alatum* Buch.-Ham. var. *nepalense* Hook. f. 42.

Koti 2700 m, *N. C. Nair* 16404, 16421; Rahla 2800 m, *N. C. Nair* 16503.

P. nummularifolium Meissn. in DC. Prodr. 14: 127, 1857; Hook. f. 53.

Common in moist soil. Chotadara 3850 m, *N. C. Nair* 16844; Kunzum Pass 4535 m, *N. C. Nair* 16783.

P. paronychioides C. A. Mey. in Bull. Soc. Nat. Mosc. 356, 1838; Meissn. 89; Hook. f. 26.

Koksar 3400 m. *N. C. Nair* 16460; Chhatru 3325 m, *N. C. Nair* 16592, 16931.

P. plebejum R. Br. Prodr. 420, 1810; Meissn. 94; Hook. f. 27.

Chotadara 3630-3850 m, *N. C. Nair* 16679, 16843; Maran Pass 4600 m, *N. C. Nair* 16773.

P. polycnemoides Jaub. et Spach. Illust. 2: 30, t. 120, 1842; Gage in Rec. bot. Surv. India 2(6): 381, 1903.

Shitikar 4169 m, *N. C. Nair* 17198a, 17198b.

P. polystachium Wall. ex Meissn. in Wall. Pl. As Rar. 3: 61, 1832; Hook. f. Fl. Brit. Ind. 5: 50, 1886.

Common in gullies. Between Dorni and Chhatru 3325 m, *N. C. Nair* 16986; Chhatru 3450 m, *N. C. Nair* 16585, 16960.

Polygonum viviparum Linn. Sp. Pl. 360, 1753; Meissn. in Wall. Pl. As. Rar. 3: 53, 1832; Hook. f. 31; DC. Prodr. 14: 124, 1857. *P. angustifolium* D. Don, Prodr. 70, 1825. *P. bulbiferum* Royle ex Bab. in Trans. Linn. Soc. 18: 94, 1838.
Maran Pass 4600 m, *N. C. Nair* 16778.

Rumex acetosella Linn. Sp. Pl. 338, 1753; Hook.f. 61.
Koksar 3425 m, *N. C. Nair* 17043.

R. nepalensis Spreng. Syst. 2: 159, 1825; Hook. f. 60.
Rahla 2850 m, *N. C. Nair* 16521; Koksar 3400 m, *N. C. Nair* 16563; between Dorni and Chhatru 3325 m, *N. C. Nair* 16983.

THYMELAEACEAE

Wikstroemia canescens Meissn. in Denkschr. Regensb. Bot. Gesellsch. 3: 288, 1841; Hook.f. 195.
Flowers yellow. Koti 2600 m, *N. C. Nair* 17116; Rahala 2900 m, *N. C. Nair* 16539.

URTICACEAE

Lecanthus wallichii Wedd. in Ann. Sc. Nat. Ser. 4: 187, 1854; *L. wightii* Wedd. in part in Hook. f. Fl. Brit. Ind. 5: 558, 1888.
Manali 2200 m, *N. C. Nair* 17139.

Urtica dioica Linn. Sp. Pl. 984, 1753; Hook.f. 548.
Koksar 3450 m, *N. C. Nair* 16559.

CUPULIFERAE

Alnus nitida Endl. Gen. Pl. Suppl. 4:20, 1847; Hook.f. 600.
Manali 2200 m, *N. C. Nair* 17144.

Betula utilis D. Don, Prodr. Fl. Nepal. 58, 1825; Hook.f. 599.
Dorni 3700 m, *N. C. Nair* 16989.

SALICACEAE

Salix flabellaris Anders. in Act. Holm. Vol. 1850: 497, 1851; Hook. f. 634.
Chandratal lake area 4169 m, *N. C. Nair* 16757; between Rohtang Pass and Koksar 4075 m, *N. C. Nair* 17072.

S. hastata Linn. Sp. Pl. 1017, 1753; Hook. 631, Dorni, 3800 m, *N. C. Nair* 16994.

ORCHIDACEAE

Epipactis latifolia Swartz in Act. Holm. 232, 1800; Hook. f. 6: 125, 1890.
Rahla 2875 m, *N. C. Nair* 16541.

Spiranthes sinensis (Pers.) Ames, Greh. 2: 53, 1908; Kitamura Fauna Fl. Nep. Him. 104, 1955. *Neottia sinensis* Pers. Syn. Pl. 2: 511, 1807. *S. australis* Lindl. in Bot. Reg. Sub. t. 823, 1824; Hook. f. 102.
Koti 2700 m, *N. C. Nair* 16401.

DIOSCOREACEAE

Dioscorea deltoidea Wall. ex Kunth, Enum. 5: 34, 1850; Hook. f. 6: 291, 1892.
Koti 2600 m, *N. C. Nair* 17105.

LILIACEAE

Allium blandum Wall. Pl. As. Rar. 3: 38, t. 260, 1832; Hook. f. 339.
In crevices of rocks. Chotadara 3850 m, *N. C. Nair* 16868.

Trillium govanianum Wall. ex Royle, Ill. 384, t. 93, 1839; Hook. f. 361. *Trillidium govanianum* Kunth, Enum. 5: 120, 1850.
Koksar 3425 m, *N. C. Nair* 17046.

JUNCACEAE

Juncus bufonius Linn. Sp. Pl. 328, 1753; Hook. f. 392.
On the sandy banks of Chandra river. Common in semi aquatic situations. Dadarphoo 3500 m, *N. C. Nair* 16923; between Chotadara and Batal 3900 m, *N. C. Nair* 16839, 16840.

J. elegans Royle ex D. Don in Trans. Linn. Soc. 18: 321, 1841; *G. samuels* in Hand.-Mazz. Symb. Sin. 7: 1235, 1936. *J. concinus* D. Don in Trans. Linn. Soc. 18: 321, 1841 non Don. 1825; Hook. f. 399. Rahla 2900 m, *N. C. Nair* 16532.

J. himalensis Klotzch in Klot. et Garc. Reise de Prinzen Waldemar von Prew. 60, t. 97, 1862; Hook. f. 398.
Koksar 3375 m, *N. C. Nair* 17006; Kunzum Pass 4535 m, *N. C. Nair* 16795.

J. membranaceus Royle ex D. Don in Trans. Linn. Soc. 18: 320, 1841; Hook. f. 397.
Dorni 3700 m, *N. C. Nair* 16990.

ARACEAE

Arisaema jacquemontii Blume in Rumphia 1: 95, 1835; Hook. f. Fl. Brit. Ind. 6: 505, 1893.
Koti 2700 m, *N. C. Nair* 16413.

LEMNACEAE

Lemna minor Linn. Sp. Pl. 976, 1753; Hook. f. 556.
Manali 2200 m, *N. C. Nair* 17145.

ALISMACEAE

Alisma plantago Linn. Sp. Pl. 342, 1753; Hook.f. 559.
Manali 2300 m, *N. C. Nair* 17151; Koti 2700 m, *N. C. Nair* 17192.

ERIOCAULACEAE

Eriocaulon nepalense Presc. ex Bong. Act. Petrop. Sc. Math. Ser. 6: 610, 1831; Hook. f. 581.
In moist places and river banks. Manali 2100 m, *N. C. Nair* 17149.

CYPERACEAE

Carex infuscata Nees in Wight Contrib. Bot. India 125, 1834 excl. var. B; Koyama in Act. Phytotax Geobot. 17: 46, 1957. *C. alpina* sensu Clarke in Hook. f. Fl. Brit. Ind. 6: 730, 1894 non Swartz.
Dadarphoo 3400 m, *N. C. Nair* 16602.

Cyperus aristatus Rottb, Deser. et Ic. 23, t. 6, fig. 1, 1773; Clarke 606.

Koti 2600-2700 m, *N. C. Nair* 16448, 17115; Rahla 2800 m, *N. C. Nair* 16511.

Cyperus metzii (Hochst.) Mattf. & Kuekenth. in Pfreich. 101; 612, 1936. *Kyllinga squamulata* Thonn. ex Vahl Enum. 2: 381, 1806; Clarke in Hook. f. Fl. Brit. Ind. 6: 589, 1894. *C. squamulatus* Suringar Het. Gesl. Cyp. 46. t. 2, f. 2, 1898 (non Steud. 1855). *K. metzii* Hochst. ex Steud. Syn. Cyp. 70, 1855.

C. sanguinolentus Vahl Enum. 2: 351, 1806. *Pycreus sanguinolentus* (Vahl) Nees in Linnaea 9: 283, 1834; Clarke 590.

Koti 2700 m, *N. C. Nair* 16450; Manali 2300 m, *N. C. Nair* 17146.

Kobresia schoenoides Boeck. in Linnaea 39: 7, 1875; Clarke 697.

Chotadara 3630 m, *N. C. Nair* 16677; Dadarphoo 3400 m, *N. C. Nair* 16905.

Scirpus triangulatus Roxb. (Hort. Beng. 81, 1814 nom. nud.) Fl. Indica 1: 219, 1820; Koyama in J. Fac. Sci. Univ. Tokyo 7 (6): 317, 1958. *S. mucronatus* sensu Clarke in Hook. f. Fl. Brit. Ind. 6: 657, 1894 non Linn.

In marshy places. Manali 2300 m, *N. C. Nair* 17150, 17155.

S. setaceus Linn. Sp. Pl. 49, 1753 pro parte; Clarke 656.

Koti 2700 m, *N. C. Nair* 16451; Chhatru 3400 m, *N. C. Nair* 16657.

GRAMINEAE

Agropyron canaliculatum Nevski in Bull. Jard. Bot. U.R.S.S. 30: 509, 1932; Bor, Grass. Burm. Cey. Ind. Pak. 659, 1960. *A. longiaristatum* in Hook. f. Fl. Brit. Ind. 7: 368, 1896.

Koksar 3375-3400 m, *N. C. Nair* 16547, 17000, 17005. Kunzum Pass 4225 m, *N. C. Nair* 16697; Badadara 3975 m, *N. C. Nair* 16850; Dadarphoo 3530 m, *N. C. Nair* 16910.

Agrostis canina Linn. Sp. Pl. 62, 1753; Hook. f. 255; Bor 386.

Dadarphoo 3400-3500 m, *N. C. Nair* 16601, 16901; Chhatru 3350-3400 m, *N. C. Nair* 16934, 16935, 16942; Koksar 3375 m, *N. C. Nair* 17009, 17010; between Rohtang Pass and Koksar 4475 m, *N. C. Nair* 17069.

A. pilosula Trin. var. **royleana** (Trin.) Bor in Kew Bull. 1954; 459, 1954; Bor, Grass. Burm. Cey. Ind. Pak. 389, 1960. *A. royleana* Trin. in Mem. Acad. Sci. Petersb. Ser. 6(6): 371, 1841. *Calamagrostis pilosula* Hook. f. var. *alpestris* Hook. f. Fl. Brit. Ind. 7: 264, 1896. Rohtang Pass 4000 m, *N. C. Nair* 17077.

A. tenuis Sibth. Fl. Oxon. 36: 1794; Bor 391, Koksar 3375 m, *N. C. Nair* 17026.

Apluda mutica Linn. Sp. Pl. 82, 1753; Bor 93. *A. varia* Hack. subsp. *aristata* Hack. in DC. Monogr. Phanerog. 6: 196, 1899; Hook. f. Fl. Brit. Ind. 7: 150, 1896.

Manali 2100 m, *N. C. Nair* 17143.

Bromus japonicus Thunb. Fl. Jap. 52, t. 11, 1784; Bor 455.

Koksar 3400 m, *N. C. Nair* 16551.

Calamagrostis pseudophragmites (Hall. f.) Koeler, Discr. Gram. 106, 1802; Bor 396. *Arundo pseudophragmites* Hall. f. in Roem. Arch. far Bot. 1(2): 11, 1797. *Calamagrostis littorea* DC. in Hook. f. loc. cit. 261.

Near streams as well as on dry hill slopes. Koksar 3360 m, *N. C. Nair* 16567; Chhatru 3350 m, *N. C. Nair* 16933, 16938; Dadarphoo 3530 m, *N. C. Nair* 16920.

Dactylis glomerata Linn. Sp. Pl. 71, 1753; Hook. f. in Fl. Brit. Ind. 7: 335, 1896; Bor 530.

Koksar 3375-3400 m, *N. C. Nair* 16545, 16550; Koti 2600 m, *N. C. Nair* 17102.

Danthonia cachemyriana Jaub. et Spach. Ill. Pl. Or. 4: 46, 1851; Bor 530. *D. exilis* Hook. f. Fl. Brit. Ind. 7: 281, 1896.

Rahla 2900 m, *N. C. Nair* 16534; Koksar 3400 m, *N. C. Nair* 17017, 17048; Dorni 3700 m, *N. C. Nair* 16534, 16992.

Deyeuxia pulchella (Griseb.) Hook. f. Fl. Brit. Ind. 7: 268, 1896; Bor 399. *Calamagrostis pulchella* Griseb. in Goett. Nachr. 78, 1869.

Chhatru 3400 m, *N. C. Nair* 16939; Kunzum area 3975 m, *N. C. Nair* 16703.

Echinochloa crusgalli (Linn.) Beauv. var. **breviseta** (Doell) Neilr., Fl. Nied. Ost. 31, 1859; Bor 310. *Panicum crusgalli* var. *brevisetum* Doell, Fl. Bad. 1: 232, 1857.

Manali 2200 m, *N. C. Nair* 17137.

Erianthus rufipilus (Steud.) Griseb. in Nachr. Ges. Wis. Gottingen 93, 1868; Bor 152; *Saccharum rufipilum* Steud. Syn. Pl. Glum. 1: 409, 1855. *Erianthus fulvus* Nees ex Steud. loc. cit. 409 nom. nud; et ex Hack. in DC. Monogr. Phan. 6: 147, 1889; et ex Hook. f. in Fl. Brit. Ind. 7: 123, 1896.

Tall grass. Manali 2100 m, *N. C. Nair* 17141.

Muehlenbergia duthieana Hack. in Ost. Bot. 2: 52: 11, 1902; Bor 401. *M. sylvatica* of Hook. f. 259, non Torr. 1834.

Manali 2200 m, *N. C. Nair* 17138; Koti 2700 m, *N. C. Nair* 16444, 17101; Rahla 2800 m, *N. C. Nair* 16506, 16509.

Oryzopis lateralis (Regel) Stapf apud Hook. f. 234; Bor 640.

Kunzum pass 4225 m, *N. C. Nair* 16696; Kunzum area 3975 m, *N. C. Nair* 16704; Koksar 3375 m, *N. C. Nair* 17004.

Pennisetum lanatum Klotz. in Bot. Erg. Weldem Reise 65, t. 99, 1862; Hook. f. in Fl. Brit. Ind. 7: 84, 1896; Bor, 345.

Koksar 3325-3425 m, *N. C. Nair* 16489, 16562, 17052.

Phleum alpinum Linn. Sp. Pl. 59, 1753; Hook. f. 236; Bor, 402.

Koksar 3400 m, *N. C. Nair* 16490, 17008; Chhatru 3325 m, *N. C. Nair* 16595.

Poa alpina Linn. Sp. Pl. 67, 1753; Hook. f. 338; Bor 555.

Badadara 3975 m, *N. C. Nair* 16851, 16852.

P. annua Linn. Sp. Pl. 68, 1753; Hook. f. 345; Bor 555.

Koksar 3400 m, *N. C. Nair* 16496.

P. araratica Trautv. in Act. Hort. Petrop. 2: 486, 1873; Bor 555.

Between Rohtang Pass and Koksar 4475 m, *N. C. Nair* 17070; Koksar 3400 m, *N. C. Nair* 17002.

P. supina Schrad. Fl. Germ. 1: 289, 1806; Bor, 561.

Koti 2700 m, *N. C. Nair* 16452; between Rohtang Pass and Koksar 4475 m, *N. C. Nair* 17065, 17068.

CUPRESSACEAE

Juniperus wallichiana Brandis in For. Fl. Ind. 537, 1874. *J. pseudosabina* Hook. f. Fl. Brit. Ind. 5: 646, 1888 non Fisch. et Mey.

Used as fuel and burnt as incense. Koksar 3360 m, *N. C. Nair* 16568.

EPHEDRACEAE

Ephedra gerardiana Wall. ex Stapf in Denks. Math.-Nat. Kl. Akad. Wiss. Wien. 56: 75, t. 3, 18, 31, fig. 1, 1889. *E. vulgaris* Brandis in Hook. f. loc. cit. 640 non Rich.

Dadarphoo 3400 m, *N. C. Nair* 16628; Kunzum Pass 4325 m, *N. C. Nair* 16723.

ASPIDIACEAE

Athyrium asperum (Blume) Milde. *Diplazium asperum* Blume, *D. polypodioides* Blume.

Common near Rahla 4100 m, *N. C. Nair* 17082, 17083, 17120.

A. felixfoemina (Linn.) Roth var. **dentigera** Wall.

Koksar 3400 m, *N. C. Nair* 17019; Dorni 3400-3775 m, *N. C. Nair* 16996a, 16998; Chhatru 3400 m, *N. C. Nair* 16940.

A. schimperi Moung.

Koksar 3400 m, *N. C. Nair* 17013.

A. sorgogonense (Presl) Milde. var. **stolickzae**.

Koksar 3400 m, *N. C. Nair* 17028, 17031.

Lastrea graciliscens Hook.

Koti 2600 m, *N. C. Nair* 17122.

Polystichum prescottianum Wall.

Dorni 3775 m, *N. C. Nair* 16996.

P. prescottianum Wall. var. **bakerianum** (C. B. Clarke) Bedd.

Dorni 3775 m, *N. C. Nair* 16997.

ASPLENIACEAE

Asplenium septentrionale Hoffm.

Between Rohtang Pass and Koksar 3680 m, *N. C. Nair* 17058; Dadarphoo 3400 m, *N. C. Nair* 16619.

A. viride Huds.

Dadarphoo 3400 m, *N. C. Nair* 16614.

PTERIDACEAE

Coniogramme fraxinea (Don.) Diels *Diplazium fraxineum* Don., *Syngramma fraxinea* Bedd. (in part).

Koti 2625 m, *N. C. Nair* 17127.

Cryptogramma crispa R. Br.

Chhatru 3400 m, *N. C. Nair* 16944.

Onychium contiguum (Wall.) Hope

Koti 2700 m, *N. C. Nair* 16431.

LITERATURE CITED

AITCHISON, J. E. T. Lahul its flora and vegetable products. *J. Linn. Soc. Bot.* 10: 69-101, 1868.

JOSHI, A. C. Aquatic vegetation of Lahul. *Paleobotanist* 1: 277-280, 1952.

RAU, M. A. On a collection of plants from Lahul. *Bull. bot. Surv. India* 2 (1 & 2): 45-56, 1960.

WADIA, D. N. *Geology of India* ed. 3. London 1957.

WATT, G. Notes on the vegetation of Chamba State and British Lahul. *J. Linn. Soc. Bot.* 18: 368-382, 1881.